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OFFICE FOR EMERGENCY MANAGEMENT
WAR MANPOWER COMMISSION

INFORMATION CONCERNING MANNING TABLES

ERRATA
Footnote at bottom of
page 4 should read:
see "opposite" instead of
"reverse". Table, page 14,
should follow Page 7

OCTOBER 26, 1942

Office for Emergency Management
WAR MANPOWER COMMISSION
Washington

In a total war, each person in the Nation should do as nearly as possible that thing for which he is best equipped. The War Manpower Commission and the Selective Service System recognize this principle and propose to leave in industry the irreplaceable worker and to allow employers time to procure and train replacements for those who are taken into the armed forces. The Manning Table Plan is a method developed by the staff of the War Manpower Commission and the Selective Service System to assist management in accomplishing the foregoing.

Paul V. McNutt, Chairman
War Manpower Commission

Lewis B. Hershey

Lewis B. Hershey, Director
Selective Service System

THE MANNING TABLE PLAN

Purpose

The major purpose of the Manning Table Plan is to indicate the form in which the employer should keep the record of his labor force, so as to provide a basis for planning the orderly withdrawal of workers from his industry into the armed forces of the country with the least possible disturbance to production.

Both trained fighters and trained workers are essential to the winning of the war. Trained fighters, however, are more restricted as to age, sex, and physical condition than are workers. The needs of the armed forces will compel the eventual induction into active service of practically all men who can meet the age, physical and other requirements. These men must be released by industry. The Manning Table Plan provides the basis for the withdrawal of such workers at a rate that will allow others not suitable for active service to be trained to replace them.

Other Uses

The Manning Table Plan provides for a complete manpower inventory of the company or plant using it. This information forcibly emphasizes to management many important facts:

1. The different kinds of jobs in the plant or activity.
2. The number of workers necessary to do each kind of job.
3. The type of worker suited to do each job and the possibility of substituting other workers of less skill.
4. The amount and kind of training needed to train an unskilled worker to do each job.
5. Calls attention to training methods which often result in improved training techniques.
6. Reveals the jobs in which women are employed and also those in which women could replace men.
7. Supplies the information needed for forecasting labor requirements in connection with anticipated production program; e.g., if the output of the plant is to be raised 30%, an accurate estimate can be made of the number and kinds of workers that will be needed to accomplish this increased production.
8. Often reveals job relationships and suggests a logical chain of promotion or upgrading.
9. Reveals unbalance between number of skilled workers and unskilled, or workers and supervisors.
10. Calls attention to those jobs where physically handicapped or disabled persons can be used.

How to Obtain Permission to Participate

Only those activities which are essential to the war effort qualify for the Manning Table Plan. This includes manufacturing plants whose business volume is 75% or more in war materials, and certain other industries, such as public utilities, railroads, etc. Plants or activities of this class desiring to participate in the Manning Table Plan will fill out WMC Form 500 herewith. This form, when filled out, should be mailed to the Office of the Regional or Area Director of the Manpower Commission in whose territory the plant or activity is located. If the request is granted, the Director concerned will forward to the Company, sufficient materials and instructions for compiling five copies of the Table.

Arrangements have been made under which certain national and regional associations are authorized to accept and pass upon the above requests. Applications received at Regional and Area offices from members of associations who are authorized to accept and pass upon requests under the foregoing authority, will be automatically transmitted to the appropriate office, and the company concerned advised accordingly.

When the Manning Table has been drafted by the plant or activity, it will retain one copy and forward the four others to the Office of the WMC Regional or Area Director. The Regional or Area Director will arrange for the validation of the Manning Table and will advise the plant or activity concerned of any additional action required of it.

The Regional or Area Director will retain one copy of the Manning Table: will forward the second copy to the State Director of Selective Service in whose state the plant or activity is located, and after review the third copy to the Washington office of the War Manpower Commission. The fourth copy will be sent to the Director of the United States Employment Service in whose area the plant is located.

What the Manning Table Is

The Manning Table is a listing, with appropriate supporting data, of the different kinds of jobs in a plant or activity from the viewpoint of the type of worker needed to fill each job. The Manning Table records all the different kinds of jobs and describes the skill, training, and experience needed by the worker to fill each job. It also requires a showing of the essential characteristics needed by each worker for each job and the estimated length of time required to train a replacement for each worker.

How to Construct

The first step is that each job must be accurately described by:

Identifying it with the appropriate code reference from the Dictionary of Occupational Titles, or

A complete individual job description prepared by the plant or activity.

Duplicate jobs are counted and the number indicated. For example, the Turret-Lathe Department of a manufacturing plant might employ 300 or more people: 75 of these might be Turret-Lathe Operators; 200 might be Machinists' Helpers; 15 might be Screw-Machine Operators; 10 might be Job Setters; 6 might be Assistant Foremen and 1 Department Foreman. Thus the department might have 307 workers, but only 7 jobs. Each job is listed separately. The number of workers employed on each job is given, and it is indicated whether these workers are male or female. If no women are now employed, there is a space provided to indicate whether or not women workers might be substituted. The male employees are shown according to age groups of fixed intervals and whether they are single or married.

Certain other information is supplied by the Manning Table, such as the time required to train new workers, the jobs that are filled by handicapped persons, and the number of additional employees needed.

Manning Tables will be kept current by periodic review once each six months, and by special review at such other times as the personnel requirement picture of the activity is substantially changed, as for example an increase in, or cancellation of, war contracts, etc. This will be accomplished by "Reports of Changes in Manning Tables", forms and instructions for which will be furnished in due time.

HOW THE MANNING TABLE WORKS IN CONNECTION WITH SELECTIVE SERVICE.

A Manning Table must be accepted by the State Director of Selective Service of the State in which the plant is located, before it is applicable to any Selective Service activity. When the State Director has reviewed and accepted the Table, he will assign a State Acceptance Number to the employer. The employer will then be authorized to use this State Acceptance Number and to place a prescribed State Acceptance Stamp on the Affidavit -- Occupational Classification (Form 42A).

indicating that the time for replacement - usually the same as the training time- of an employee is in accordance with the table accepted by the State Director.

When an employer has been notified that his table has been accepted by the State Director, he is authorized to use the prescribed State Acceptance Stamp on the Affidavits for Occupational Classification which were filed in accordance therewith. The employer will file Affidavit -- Occupational Classification (Form 42A) for all employees within the ages liable to military service for whom occupational deferment is then necessary. Forms 42A filed under this Plan and bearing the authorized State stamp will be forwarded by the employer direct to the local Board and will supersede any such forms or requests for occupational deferment previously filed.

The new Form 42A will show how long it will take the employer to replace the employee, the time indicated being based upon the accepted manning table.

Until further notice, it will not be necessary for the employer to file a Form 42A for registrants who have wives and children or who have children, with whom they maintain a bona fide family relationship in their home.

The employer should, however, file an Occupational Certification by Employer (Form 42B) for such employees, and whenever the Director of Selective Service determines that it is necessary to reclassify men in this status, the employer may file a Form 42A at that time. This procedure will enable the local board to properly classify the registrant, and to notify the employer if the registrant is classified or reclassified.

When an employer has filed an Affidavit -- Occupational Classification (Form 42A) or Occupational Certification by Employer (Form 42B) for a registrant, the local board will be required to notify the employer on Notice to Employer, (Form 59) revised, whenever the registrant is classified or reclassified.

When an employer has filed Form 42A for a registrant, this form shall be considered to be written evidence of the occupational necessity of the registrant, and the employer may appeal to a Board of Appeal from any classification of the registrant by the local board, under the provision of section 627.2, Selective Service Regulations.

Full responsibility for classification as prescribed in Selective Service Regulations remains with the local board under the Manning Table Plan, and all classifications are subject to the usual appeal procedures.

The acceptance of such a plan by the State Director and the use of the approved State stamp informs the local board that careful consideration has been given to occupational classification requirements and the time required to replace registrants by the employer, the War Manpower Commission, and by the State Director of Selective Service. Local boards will, however, continue to give the same serious consideration to requests for deferment from plants which do not use the Manning Table as they have in the past.

WMC FORM NO. 500

Budget Bureau No. 11-R003-42
Approval Expires January 31, 1943

APPLICATION TO PARTICIPATE IN THE MANNING TABLE PLAN

Date

If the Company operates more than one plant or activity, an application should be filed for each one desiring to participate.

Name of company ________________

Location of plant or activity ____________________

Total number of workers employed __________________

Number of shifts operated _________________________

Percentage of workers engaged in war work ____________

Approximate percentage of monthly volume of business which is made up of war products ________________

Approximate number of Selective Service Boards which have jurisdiction over workers in this plant _______________________

On what date will you start to compile Manning Tables? _____________

Is Company a member of a National or Regional Association?

If yes, Name ________________________ Address ____________________________

Signed by __________________________ *Position _________________________

* Must be signed by an authorized executive of the Company - i. e., President, Vice President, Secretary, etc. and forwarded to the Regional or Area Director of the War Manpower Commission in which the plant is located.

If further correspondence is to be with someone other than the signing executive, give name and position and company on line below:

Name ____________________________________ Position ____

Company __________________________________ Address ____

See reverse side for addresses of War Manpower Regional Offices

Appendix A

REGIONAL AREAS
WAR MANPOWER COMMISSION

REGION I - Maine, New Hampshire, Vermont, Connecticut, Rhode Island, Massachusetts
Regional Director, WMC
*10 Post Office Square Building, Boston, Mass.

REGION II - New York State
Regional Director, WMC
11 W. 42nd St., New York, N. Y.

REGION III - Pennsylvania, Delaware, New Jersey
Regional Director, WMC
1634 Widener Building, Philadelphis, Pa.

REGION IV - Maryland, Virginia, West Virginia, District of Columbia, and North Carolina
Regional Director, WMC
Room 405, Arlington Hotel Building, 1025 Vermont Ave., N.W.
Washington, D. C.

REGION V - Ohio, Kentucky, Michigan
Regional Director, WMC
521 Union Commerce Building, Euclid Ave. & E. 9th Street,
Cleveland, Ohio

REGION VI - Indiana, Illinois, Wisconsin
Regional Director, WMC
Bankers' Building, Room 600
105 West Adams Street, Chicago, Illinois

REGION VII - Alabama, Florida, Georgia, Mississippi, South Carolina, and Tennessee
Regional Director, WMC
Lullwater Building, 441 W. Peachtree, Atlanta, Ga.

REGION VIII - Minnesota, Iowa, N. Dakota, S. Dakota, and Nebraska
Regional Director, WMC
c/o John T. McCullen, Regional Representative, U.S.E.S
Federal Office Building, Minneapolis, Minnesota

REGION IX - Missouri, Arkansas, Kansas, Oklahoma
Regional Director, WMC
414 Dierks Building, 1006 Grand Avenue, Kansas City, Mo.

REGION X - Texas, Louisiana, New Mexico
Regional Director, WMC
14th Floor, Petroleum Tower Building, Dallas, Texas

REGION XI - Montana, Wyoming, Idaho, Utah, and Colorado
Regional Director, WMC
246 Equitable Building, Denver, Colorado

REGION XII - California, Arizona, Oregon, Washington, and Nevada
Regional Director, WMC
245 Furniture Mart Building, San Francisco, California

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* Temporary Address

MANNING TABLE
SCHEDULE A

Budget Bureau No. 11-R002-42
Approval Expires January 31, 1943

WAR MANPOWER COMMISSION
WMC FORM NO. 501-A

SHEET OF SHEETS

LINE NUMBER	OCCUPATIONAL IDENTIFICATION DATA			MINIMUM TRAINING TIME ( )	PRESENT NUMBER EMPLOYED				
	PLANT JOB TITLE	OCCUPATIONAL DICTIONARY JOB TITLE	DICTIONARY & PLANT CODE		WHITE		OTHER		TOTAL
					MALE	FEMALE	MALE	FEMALE	
	1	2	3	4	5	6	7	8	9

Appendix B - Sheet 1

WAR MANPOWER COMMISSION
WMC FORM NO. 501-B

MANNING TABLE
SCHEDULE B

Budget Bureau No. 11-R002-42
Approval Expires January 31, 1942

SHEET OF SHEETS

LINE NUMBER	PERCENTAGE		JOB FILLED BY HANDICAPPED WORKERS	JOB TO BE RE-ENGINEERED (JOB BREAKDOWN)	ADDITIONAL FUTURE LABOR NEEDS												
					SUPPLIED FROM WITHIN PLANT		RECRUITED FROM OUTSIDE PLANT										
							MONTHLY REQUIREMENTS					MAXIMUM NEEDS		MINIMUM EXPERIENCE REQUIRED			
	BY DEPT.	BY PLANT			UPGRADED	TRANSFERRED	CURRENT MONTH	2ND MONTH	3RD & 4TH MONTHS	5TH & 6TH MONTHS	TOTAL 6 MONTHS	NUMBER	DATE	SAME EXPERIENCE	RELATED EXPERIENCE	VOCATIONAL TRAINEES	INEXPERIENCED
	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

Appendix B - Sheet 2

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(Do not use this box)

WAR MANPOWER COMMISSION
JOB DESCRIPTION

(For Use in Making Manning Tables)

1. COMPANY NAME: X. Y. Z. Co., 2. Page No. 1A Line No. 5
(As on Schedule A of Manning Tables)

3. PLANT NAME: A 4. DEPARTMENT: Production Lathe

5. JOB TITLE: BAND-SAW OPERATOR
(List first most common title used in plant and any additional titles - separate by semi-colons)

6. MINIMUM TIME NOW REQUIRED TO TRAIN A REPLACEMENT: 200 hours

7. SPECIAL PHYSICAL REQUIREMENTS: NONE
(State unusual requirements of job - eyesight, strength or other, and what portion of job requires this trait.)

8. SUPERVISION: Receives work assignments from Foreman, completing them according to prescribed standards.
(Indicate type of supervision received or given)

9. DESCRIPTION OF WORK PERFORMED:
SUMMARY *(Give overall picture of job in one or two sentences.)* Cuts sheet metal blanks to specified dimensions using a power-driven band saw.

Steps performed in the job	Percent of Time	Exactly How Performed (Include special skills, machines, tools, judgments, decisions)
a. Marks sheet for * entry, according to specifications	13%	Lays out lines to be cut using T square, compass, triangle and chalk or scriber
b. Clamps marked sheet to work table	5%	Uses clamps to fasten workpiece to table.
c. Directs lubricating fluid against cutting edge	2%	
d. cuts blank from sheet **	80%	Starts saw and turns handwheel or engages power-driven feed to move stock against blade of saw.

(Use other side for comments and additional space)

Indicate most essential skill with *

Indicate next most essential skill with **

9. DESCRIPTION OF WORK PERFORMED (Continued):

Steps Performed in the job	Percent of Time	Exactly How Performed (Include special skills, machinery, tools, judgments, decisions)

10. COMMENTS: *(Use this space to enter additional information explaining items on this form; to give additional facts about this job; to indicate where job fits into industrial process; to explain differences between this and similar jobs; to define any special terms peculiar to the job; or any other pertinent information.)*

Worker must exercise care to avoid amputating fingers.

(Do not use this box)

WAR MANPOWER COMMISSION
JOB DESCRIPTION

(For Use In Making Manning Tables)

1. COMPANY NAME: X.Y.Z. Co.   2. ITEM NO. 1A   LINE NO. 5

(As on Schedule A of Manning Tables)

3. PLANT NAME: A   4. DEPARTMENT: Production Lathe

5. JOB TITLE: BAND-SAW OPERATOR

(List first most common title and any additional titles separated by semicolons)

6. MINIMUM TIME REQUIRED TO TRAIN A REPLACEMENT: 200 hours

7. PHYSICAL REQUIREMENTS: None

(State unusual requirements of job: eyesight, strength or other, and portion of job requiring trait)

8. SUPERVISION: Receives work assignments from Foreman completing them according to prescribed standards.

(Indicate type of supervision received or given)

9. DESCRIPTION OF WORK PERFORMED:

SUMMARY *(Give an overall picture of job in one or two sentences)* Cuts sheet metal blanks to specified dimensions using a power-driven band saw.

Steps Performed in Job (Include special skills, machines, tools, judgments, decisions.)	Percent of time
a. Lays out lines to be cut on sheet metal according to specifications using T square, triangles, compass, and scriber or chalk *	13%
b. Clamps marked sheet metal to machine table	5%
c. Directs lubricating fluid against saw cut	2%

Indicate most essential skill with *
Indicate next most essential skill with **

(Use other side for comments and additional space)

Steps Performed in Job (Include special skills, machines, tools, judgments, decisions.)	Percent of Time
d. Starts band saw and feeds work against saw blade, using hand wheel or power driven feed. **	80%
e. Stops saw and unclamps cut metal blank from machine table.	
f.	
g.	
h.	
i.	

10. COMMENTS: *(Use this space to enter additional information explaining items on this form; to give additional facts about this job; to indicate where job fits into industrial process; to explain differences between this and similar jobs; to define any special terms peculiar to the job; or any other pertinent information)*

Worker must exercise care to avoid amputating fingers.

(Do not use this box)

WAR MANPOWER COMMISSION
JOB DESCRIPTION

(For Use in Making Manning Tables)

1. COMPANY NAME: X. Y. Z. Co. 2. ITEM NO. 1A LINE NO. 5
(As on Schedule A of Manning Tables)

3. PLANT NAME: A 4. DEPARTMENT: Production Lathe

5. JOB TITLE: BAND-SAW OPERATOR
(List first most common title and any additional titles separated by semicolons)

6. MINIMUM TIME REQUIRED TO TRAIN A REPLACEMENT: 200 hours

7. PHYSICAL REQUIREMENTS: None
(State unusual requirements of job; eyesight, strength, or other and portion of job requiring trait)

8. SUPERVISION: Receives work assignments from Foreman, completing them according to prescribed standards.
(Indicate type of supervision received or given)

9. DESCRIPTION OF WORK PERFORMED: *(State purpose of job; how performed, including explanations, special skills, machines, tools, judgments, decisions)*

Saw sheet metal blanks to specified dimensions using a power-driven endless band saw; lays out dimensions given in blueprint on metal stock using T square, compass, triangles and scriber or chalk to mark the lines; clamps stock to table of machine and adjusts the angle of the table to make beveled or vertical cuts; starts band saw motor; directs a stream of lubricative fluid over the saw cut; feeds stock against saw using hand or power-driven feed; cuts stock along scribed lines readjusting machine as necessary for each cut; unclamps and removes cut stock from work table.

(Use other side for comments and additional space)

10. COMMENTS: *(Use this space to enter additional information explaining items on this form; to give additional facts about this job; to indicate where job fits into industrial process; to explain differences between this and similar jobs; to define any special terms peculiar to the job; or any other pertinent information)*

MANNING TABLE
SCHEDULE C
SELECTIVE SERVICE DATA

Budget Bureau No. 11-R002-42
Approval expires January 31, 1943

WAR MANPOWER COMMISSION
WMC FORM NO. 501-C

SHEET 1 OF 6 SHEETS

LINE NUMBER	UNDER 18	18 AND 19			20 THROUGH 24			25 THROUGH 29			30 THROUGH 34			35 THROUGH 39			40 THROUGH 44			45 AND OVER	TOTAL MALES
		SINGLE	MARRIED	MARRIED & DEPENDENTS	SINGLE	MARRIED	MARRIED & DEPENDENTS	SINGLE	MARRIED	MARRIED & DEPENDENTS	SINGLE	MARRIED	MARRIED & DEPENDENTS	SINGLE	MARRIED	MARRIED & DEPENDENTS	SINGLE	MARRIED	MARRIED & DEPENDENTS		
	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47

Appendix B - Sheet 3

U. S. GOVERNMENT PRINTING OFFICE: 1942 O - 492775

WAR MANPOWER COMMISSION

BUREAU OF MANPOWER UTILIZATION

Division of Occupational Analysis and Manning Tables

PHYSICAL DEMANDS FORM

Job Title______________________________________Occupational Code__________
Dictionary Title____
Firm Name & Address____
Industry_______________________________________Industrial Code____________
Branch__________________Department____
Company Officer_____________Analyst_______________________Date_______________

PHYSICAL ACTIVITIES

1 Walking
2 Jumping
3 Running
4 Balancing
5 Climbing
6 Crawling
7 Standing
8 Turning
9 Stooping
10 Crouching
11 Kneeling
12 Sitting
13 Reaching
14 Lifting
15 Carrying
16 Throwing
17 Pushing

18 Pulling
19 Handling
20 Fingering
21 Feeling
22 Talking
23 Hearing
24 Seeing
25 Color Vision
26 Depth Perception
27 Working Speed
28
29
30
31

WORKING CONDITIONS

51 Inside
52 Outside
53 Hot
54 Cold
55 Sudden Temp. Changes
56 Humid
57 Dry
58 Wet
59 Dusty
60 Dirty
61 Odors
62 Noisy
63 Adequate Lighting
64 Adequate Ventilation

65 Vibration
66 Mechanical Hazards
67 Moving Objects
68 Cramped Quarters
69 High Places
70 Exposure to Burns
71 Electrical Hazards
72 Explosives
73 Radiant Energy
74 Toxic Conditions
75 Working With Others
76 Working Around Others
77 Working Alone
78
79
80
81

DETAILS OF PHYSICAL ACTIVITIES:

DETAILS OF WORKING CONDITIONS:

DETAILS OF HAZARDS:

Miss Nienburg

Manning Tables

WAR MANPOWER COMMISSION
Bureau of Manpower Utilization

THE EMPLOYMENT OF WOMEN:
Facing Facts in the Utilization of Manpower

DIVISION OF OCCUPATIONAL ANALYSIS AND MANNING TABLES
June 1943

FOREWORD

The Division of Occupational Analysis and Manning Tables, of the Bureau of Manpower Utilization, initiated a Manpower Analysis program in the late Fall of 1942.

The purpose of a Manpower Analysis is to present to the employer and to the War Manpower Commission a complete picture of the manpower problems within the plant in order to provide a factual basis for maximum utilization of workers' skills. Employers' participation in the program is entirely voluntary.

Manpower Analyses are plant studies made as a service to management by Occupational Analysts assigned to the War Manpower Commission's field offices. The first part of each study consists of a Manning Table, including a complete inventory of jobs in the plant, the training time required for each job, the number and sex of workers, the number of physically handicapped persons employed, the distribution of male employees by Selective Service Status, and the estimated future labor needs. The second part is an analysis of the labor utilization practices in the plant and the problems involved it, such as training, housing and transportation difficulties, turnover and absenteeism.

The greatest value of a Manpower Analysis is the assistance rendered to the establishment in which it is made. Responsibility for optimum labor utilization, and ability to promote and ensure it, rest with the individual employer. On the other hand, it is often possible to give him very real assistance through techniques about which he may not be informed, through a point of view not restricted to one plant or one industry, and, above all, by giving an impetus to his consideration of labor utilization problems. The Manpower Analyses have pointed out many of the actual reasons for failure to utilize women as a source of labor and have indicated some solutions to problems involved in the employment of additional women in plants, or their introduction to establishments that are using only men in the production departments. This information, amplified by research into recent publications, is made available in the following article so that the "know how" reported by one Analyst can be circularized among the persons who may be faced with similar problems.

THE EMPLOYMENT OF WOMEN:

FACING FACTS IN THE UTILIZATION OF MANPOWER

To increase the Armed Forces to the published estimate of 10.7 million in December 1943, approximately 4.1 million men who can meet military standards must be withdrawn from civilian life. Because of the curtailment of non-essential activities, some of these men will not have to be replaced in their former jobs. However, war industries need an increasing number of workers and the total of those engaged in agriculture must be maintained at least at present level. It has been estimated that during 1943, 2.7 million persons must be added to the number in the labor force and the Armed Services at the beginning of the year. Most of these 2.7 million persons will be women, largely housewives who are entering the labor market.

Although it is generally accepted that current and future labor demands can be met only through large scale employment of women, it is often difficult for individual management to relinguish traditional personnel policies. The employment of women in war industries is increasing daily, but their number still falls far short of the actual need for them if we are to attain the production volume required for global warfare.

Even after the decision is made to employ women, many questions remain and some problems arise which are difficult to meet with the rather limited experience and information available at the local level.

Certain facts seem to be clear from experience with the employment of women in this country:

Many firms have reported higher production by women in comparison with men on similar jobs.

The traditional idea of jobs "suitable" or "unsuitable" for women should be reconsidered in the light of the fact that women are known to be performing almost every type of job.

Separate or additional restroom facilities must be provided and some minor changes, such as raising benches, providing chairs and installing lifting or conveying devices are sometimes necessary before introducing women into many jobs.

Once women are employed in a plant, male employees generally have had little objection to additional women workers, and few of the disciplinary problems which some employers fear ever develop.

Although there is no new major problem brought into supervisory work in connection with supervising women, the phrase "more thoughtful supervision" seems to indicate what is needed in the handling of women who are new to industry.

General experience indicates that women have a better accident record than men, particularly if certain safety precautions are observed.

Damage to tools and materials is often less than when similar work is performed by men.

Turnover is reduced by the employment of women, although their absenteeism record in the past has been somewhat poorer than that of men.

Women already living in the vicinity of a plant constitute a source of additional workers without aggravating the housing shortage. However, the employment of the mothers of young children creates such problems that Mr. Paul V. McNutt, Chairman, War Manpower Commission, has stated . . . no woman responsible for the care of young children should be encouraged or compelled to seek employment which deprives her children of her essential care until after all other sources of labor supply have been exhausted."

Production Records

Even though the scope of occupational opportunity for women was formerly limited by traditional practices, those who were employed generally proved themselves to be capable workers. Recently better production records have been reported by many firms for women in comparison with men on those jobs which had been held only by men prior to the war. This, of course, may be attributed to several reasons, one of which is the possibility that only the best qualified women applicants have been accepted so far. Another element may be that when they are faced with prejudice, women regard it as a challenge to be overcome through superior work.

Jobs "Suitable" for Women

As women on the average have only a little over half a man's strength, physical requirements will affect the desirability of certain jobs for them, but it cannot be categorically stated that any particular occupation is absolutely unsuitable for women. United States Census figures for 1940, recent reports of placements of women, and the experience of England, Germany and Russia prove that women are actually performing an almost limitless number of jobs, many of which require considerable physical exertion. As in all careful placement work, it is a matter of selecting the proper worker for the job. Just as some men do fine needlework, there are many women who are too "heavy handed" to perform delicate manual tasks. Although the average male is stronger than the average female, there are many men of slight physique and many women whose strength equals that of the average man.

The average woman, being about 4" shorter than the average man, is frequently at a disadvantage when called upon to reach to heights above head-level. However, women 5'8" tall should have no difficulty filling any job requiring reaching suitable for the average man.

Manpower Analyses have pointed out that the bulk and weight of materials to be handled in certain jobs is one of the major reasons advanced by the employer for not employing women. However, there is such disparity between establishments in this factor that in a great number of cases it can be overcome by managerial initiative and ingenuity in job re-engineering. Hoists for raising weights to work level, conveyor belts, and other mechanical devices have been installed in many factories to aid the workers. Other plants have broken down jobs so that a strong laborer does all the

the heavy carrying and lifting for a group of women, leaving them free to give full time to the operation of their machines. The examples of jobs filled by women in the recently released "War-Time Employment of Women in the Iron and Steel Industry in Great Britain" throw considerable light on the arduous work that can be done by women and the usefulness of such minor technological changes in tasks as the substitution of smaller shovels.

Even when the weights to be lifted or carried on the job are not very heavy, the small amount of time needed to train women, or men, in proper methods will be well repaid by decreased fatigue and greater efficiency and safety.

The Women's Bureau of the Department of Labor recommends that weights be carried on the shoulder. Although this method is primarily intended to conserve strength and protect the worker's health it is particularly important that it be observed in going up or down stairs, or in any situation where a restricted range of vision might add to the accident hazard. To prevent undue abdominal strain in lifting objects the worker should stoop down by bending her knees and not her back, keep the feet close to the object to be raised, use a narrow stance, the feet approximately 8 to 12" apart, and put the brunt of strain on leg rather than back muscles.

One rather surprising fact disclosed by the Manpower Analyses was the number of males still employed in clerical occupations. Although clerical work is the obvious field for replacement of men by women, a tabulation of 22 studies* covering a total number of 63,314 workers shows that of the 4,490 employed in clerical occupations, 3,084 were men. Only 201 of these men were above the age of 45, which seems to indicate that a great many of the remaining number are eligible for military service.

A few of these clerical occupations are in production departments, necessitate lifting heavy parts, require considerable knowledge of shop operations, patterns, dies or castings, and in some cases have been stated to be unsuitable for women. The unsuitability of these jobs for women is particularly open to question as few of the jobs require a long training period, and the physical demands could be met by strong women or be decreased by having one laborer perform the heavy lifting if mechanical aids were either not obtainable or not feasible. In any case, it appears logical that able bodied men in clerical occupations could be transferred either to these jobs in plants or trained to perform machine or other production operations where physical requirements seem too high for the average women. It is also interesting to note that of the 3,084 men employed in clerical occupations in the plants covered by Manpower Analyses, only 33 were reported to have any type of handicap.

Plant Facilities

One of the reasons frequently mentioned for the unwillingness to employ women is the lack of restroom facilities and the difficulty in securing plumbing equipment because of material shortages and priorities. In some cases, of course, the difficulty is being exaggerated, as, if the plant plans to increase its labor force and does not

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**Several Manpower Analyses did not include administrative and clerical personnel in the Manning Table for the plant, and, therefore, are omitted from this tabulation.*

have sufficient restrooms now, it will have to install or expand them, regardless of the sex of the workers to be employed.

The problem, when it actually exists, is most severe in old plants since the majority of new industrial buildings provide facilities for women. In many instances the difficulty can be overcome by minor alterations in physical layout, and this is the first possibility to be explored. Other plants faced with the same situation have made successful appeals to local real estate firms and property owners for sale or donations of such Secondhand fixtures as were exempt from War Production Board restrictions. In all cases the nearest field office of the War Production Board should be contacted immediately and the labor utilization implications explained. Since regulations concerning materials must necessarily change frequently, the various solutions can best be determined by "on the spot" cooperation with the agencies involved. It is urged that, if restroom facilities need to be improved or increased, action be taken immediately, as further delay will only increase the difficulty in securing materials.

State Laws

Federal and State laws prohibiting the employment of women in certain hazardous work affect a small percentage of occupations and must be given due consideration. A plant considering the employment of women should consult the Department of Labor representative during the initial planning period. As reported in Manpower Analyses, the Department can be of great assistance in clearing up misunderstandings on laws and indicating the minor equipment changes necessary to meet accepted standards.

The proper State Department should also be contacted concerning hours and shifts of work for women.

Union Membership

In the past, because of labor market conditions, some local unions discouraged the employment of women in closed shops. However, because of the present conditions and the expressed and demonstrated interest of unions in promoting war production and maximum labor utilization, this picture has changed, and contracts are being rewritten or amended. If an employer's use of women as a source of needed additional labor is impeded by a local union regulation, it is probably possible to secure the union's cooperation after the need has been explained.

Prejudice of Other Workers

Another factor which has appeared in a sufficient number of studies to become significant is that, although top management favors the introduction of women, foremen and other workers are opposed to it. It is logical to some extent that this would be true. The foremen are immediately affected by the employment of women and the personnel and training problems which arise in the initiation period, whereas top management is primarily concerned with meeting production schedules and, in so far as possible, without disturbing employer-employee relations, using all sources of labor to accomplish this aim. Also, it is natural that a foreman concerned with only one department would find it more difficult to grasp a problem in its widest aspect, as a component in the over all labor picture.

Management publications, in particular, have paid considerable attention to this problem and emphasize that it is necessary to secure the wholehearted cooperation and support of foremen, key men and machine operators by having them understand the reasons for the change. Much of the opposition voiced by male workers to the employment of women is merely the repetition of a traditional sentiment. In most cases the objection will disappear when the necessity for increased production, the shortage of labor, the ever expanding needs for war materiel, are explained. Enthusiastic championing of the cause by top officials and the plant labor-management committee will soon have its effect. If the men understand that they are not being displaced but are being freed for more essential contributions to the war, for work which cannot be done by anyone else, it is probable that the point of view of the higher officials will be adopted by the mass of employed personnel.

Here again a small amount of time spent in preparation will pay remarkable dividends. Much of the foremen's opposition is based on fear of the problems they will be faced with, including the idea that they will have to make machine workers out of women who traditionally are thought to be lacking in "mechanical aptitude". Personnel experts point out that there is very little difference between male and female applicants in true mechanical aptitude. It should be explained to foremen that the difference is not one of ability but rather of experience in handling tools, machine knowledge or familiarity, which can be overcome in a short pre-employment training period and is counterbalanced by women's eagerness to learn.

Training Women Workers

Manpower Analyses indicate that in some areas there is an insufficient supply of women trainees and that employers are failing to take full advantage of the vocational training facilities available to them.

In the few cases where dissatisfaction has been expressed with the vocational trainees hired, it is learned that there has been poor correlation of the training course with the work to be done on the job. Lack of active cooperation at the local level between employers, the U. S. Employment Service and vocational education authorities is largely responsible for these isolated failures.

In some communities the vocational education opportunities for women have been restricted because, with limited time and space, the schools had to train first the workers most acceptable to employers. When an employer makes his demands known to the U. S. Employment Service and the vocational authorities, there will be an incentive and a purpose in training more women. It is interesting to note that the Manufacturers Association of Connecticut, in advocating the cooperation of employers with local vocational education agencies, stated in June 1942, "State Vocational Schools will literally train employees to your order."

Besides teaching them to perform on the job, pre-employment and pre-production training for women results in the following benefits: It breaks the shock of change from home life to industrial work; reduces the fright reaction to noise, dirt, speed and danger of machinery in motion; saves shop training time; effects economy of materials; and reduces danger of injury to new operators and other employees. The school will maintain the interest of women volunteers while they are waiting for a place in production, and sift out those who are unsuitable for the job. In addition, there is substantial evidence to indicate that training reduces labor turnover.

As women normally have little if any experience in handling tools, it is necessary that their training be started on a more elementary level, and that careful supervision be given them at the beginning of their training. Although all inexperienced workers benefit from a planned training program, it is particularly important that women receive a pre-employment or pre-production course, which will give them the elementary knowledge the average man has acquired as a boy, even before he had any industrial experience. A specially selected person who can understand and be sympathetic to women's problems in their unfamiliarity with tools, mechanical devices, shop terms and practice, should teach women during their initiation period. So much of a woman's future adjustment to the work situation depends on this early training period and her initial contacts with the machine and the plant, that the idea of "more thoughtful supervision" cannot be overemphasized.

Current experience is proving that although women entering machine operation fields may begin with this handicap, they learn rapidly and can soon catch up with the men in the class. Some companies are reporting that the over-all training time for women is actually shorter than that required for men on the same operations.

Particularly because the feeling has existed that women are lacking in mechanical ability and the majority of the women now entering the market have little if any work experience, aptitude tests, such as those offered by the U. S. Employment Service of the War Manpower Commission, will be of great aid in proper selection of workers to be trained.

Women Foremen or Supervisors

There is at present quite a wide divergence of opinion on the desirability of having women in industrial departments and machine shops to supervise other women, or both men and women. Since many women are successfully filling responsible positions in production departments as supervisors, foremen, sub-foremen and leaders, this is again not a question of the "suitability" of women for supervisory work, but of proper selection of the individual. Whether or not a plant develops women foremen will depend largely on the training it can give and the speed of its upgrading program.

One point of particular importance on which employers agree is that when a woman is assigned supervisory duties, she should be given the full complement of authority and responsibility of the job and her position must be made clear to the workers under her supervision. Otherwise it is likely that they will by-pass her and take their problems to and expect to receive their orders from a man who they feel has more authority.

A woman leader or foreman may have to meet more exacting standards of ability, leadership and fairness than a man filling the same position as many workers are more critical of a female than a male supervisor.

The Personnel Department and Women Workers

There is some disagreement on the question of whether or not women applicants should be interviewed by women personnel workers. This is the rule in England, both in the Employment Exchanges and in individual establishments, and is agreed to by many plant officials and personnel experts in this country. Others believe the opposite, or that either a man or woman is equally suitable. Again it would seem that the sex of a personnel worker is not so much the criterion as his or her interviewing ability. However, a woman interviewer, because of her first-hand familiarity with the problems of the woman worker, can in many cases get a more complete picture of those elements in an applicant's personal background which affect her attendance and performance on the job, and a better selection may result.

Experience indicates the advisability of having at least one person in the plant, as personnel official or women's counselor, to whom the women workers can take their special problems and difficulties, even if these matters are not directly related to the work. Particularly because some of the problems are personal in nature, it is preferable to have a woman in this position, and the Women's Bureau of the U. S. Department of Labor further points out that she should have both personnel and industrial training. Great care should be exercised in her selection as she must be capable of appreciating the worker's difficulties and of interpreting the plant's policies to them.

Safety Records

Some employers have been reluctant to hire women because of the hazards in machine and other industrial operations. However, records seem to indicate that the accident rate of women is lower than that of men.

Pre-employment training of new workers can do much to reduce the danger of injuries, and instructions in safety methods, particularly in proper techniques of lifting and carrying weights if such tasks are involved in the job, should be given to all new workers, regardless of sex. In many establishments special attention should be paid to work clothes and shoes.

Women's traditional clothes, style of hair, and shoes are not suited to many industrial occupations. It is important that protective clothing, when it is needed, be designed to meet individual plant and job conditions.

Whether safety clothing has to be worn because of the nature of the job, or the plant prefers a uniform for the sake of neatness and general appearance, it is desirable to consult the women workers themselves, or at least to ask women's advice when choosing styles. The uniform selected should be as attractive as possible, for, otherwise, some women will seriously object to wearing it. To a woman on her first job, when she has never seen an industrial accident, its possible tragedy seems very remote from the immediate unpleasantness of having to wear an unbecoming cap.

A company requiring the wearing of a particular type of clothing will make the enforcement of its policy much easier if the reasons for wearing the clothes, as well as for other safety regulations, are explained to each new worker and a clear and firm stand is taken before the worker is hired.

Damage to Tools and Materials

General experience seems to indicate that in the case of women workers, damage to tools and materials is considerably less than when similar work is performed by men. This is particularly true where women are operating small machines, using small parts or handling delicate mechanisms. The reason is perhaps found in women's habit of handling breakable objects with care in their regular housekeeping duties.

Turnover

There are no periodic statistics on turnover for men and women separately. Comments from employers in general add up to "low", "negligible" or "inappreciable" for women, but "high" for men. In the isolated reports of high turnover for women, the reasons given are lack of facilities for child care, transportation difficulties, low wages in comparison with neighboring plants, and so on.

One reason for the lower turnover rate of women is that women are not subject to military draft. This is only one of the factors involved. Another of the causes is the fact that in many areas employment opportunities for women are still limited to the extent that there is little incentive to "shop around" for a better job as many male workers are doing. However, it is the opinion of many authorities that if women are able to make satisfactory home arrangements, they are generally more stable in job tenure than men.

Since labor turnover is one of the most distressing problems affecting American production, a lowered rate, whatever the reasons for it may be, is a great economic asset to a plant.

Upgrading and Motivation

It is too often forgotten that workers are affected by and respond to incentives other than increased wages. Opportunity for upgrading may be just as important an incentive as immediate monetary gain. Although much has been written about women's ability to do monotonous work, this should not be considered as a limitation or accepted as true for all women or for all levels of intelligence and initiative. Ambition and the desire for self-improvement, for greater responsibility and more interesting work are present among women, just as in men. Increasing numbers of women are beginning to accept the concept that they will have to earn a living for the length of their productive years, and to desire and plan for advancement at whatever occupational level it may be. War casualties will leave a number of women in the position of having to support themselves and their families.

Many women, particularly those who had worked before the present emergency, have so often been made to feel that their occupational and promotional horizon was limited by forces beyond their control, have so frequently worked at unequal wages and with less recognition in the way of title and authority than men performing the same work, that they not only are most eager for but respond to a surprising degree to any promotional opportunities given them.

A program of supplementary training, of worker observation to note individual skills and unusual aptitudes, and of upgrading whenever possible, should be part of any personnel planning and action. However, in many cases it has been limited to the male working force. This type of program is even more important when women are employed in a plant formerly staffed entirely by men, as the women present a new and untried group of workers, whose ability has not been demonstrated through past accomplishment, and who, because of varying aptitudes, may develop at unequal rates of speed.

The knowledge that upgrading possibilities exist will have a great motivating effect. Of course, this cannot be a promise unfounded in fact, as the resulting disillusion is one of the worst detriments to morale that can exist, and the program should be carried out with all the energy with which it was planned.

In planning an upgrading program, employers may find it helpful to use the Job Families developed by the Division of Occupational Analysis and Manning Tables, of the War Manpower Commission.

Absenteeism

Although men's absences have increased recently, in some cases to the extent that there is little differences between the sexes in this respect, the normal absenteeism rate for women has been somewhat higher than for men, not only in this country but also in England and Germany. However, the courses of action to meet the problem are more clear cut in the case of women. When women are absent from work, there is usually some pressing reason, such as illness or home duties.

Much absenteeism can be averted by a careful interview before a worker is hired to determine her home status and to assist her in making any necessary arrangements. A systematic but understanding follow up should be made to determine and, if possible, take steps to remedy the specific causes for absences.

The methods employed to discourage absenteeism among men, such as patriotic posters, attendance bonuses, etc., will have their effect on the female working force, but additional problems must be taken into consideration.

Several studies have shown that women are ill more frequently than men. A survey by the National Institute of Health in the winter of 1935 to 1936 included a study of the disability of some 280,000 white persons in 8 cities. Approximately 34,000 of these were white women workers 15 years old or over. The rate of illness of women 15 to 64 years of age was about 28 per 1,000 in contrast to 22 for male workers. Women experienced a higher sickness rate than men in each age group. The Boston Edison Company in analyzing all disabilities of 1 day or longer occurring in the 5-year period 1933 to 1937 found that male employees lost an average of 6.4 days a year because of illness; female employees an average of 9.9 days.

This higher illness rate, which is one of the main reasons for women's absenteeism, adds further emphasis to the importance of health conditions in the plant. Properly spaced rest periods, which are also beneficial for men, greatly reduce fatigue, improve production and safeguard the workers' health. A well equipped first-aid or emergency room is essential, and should include a cot or bed.

Nutrition is such an important health factor that the eating facilities for workers should receive special attention. Workers should be able to secure nourishing meals at reasonable cost, and within close distance to their work stations. Education in the selection of foods is also advisable, as, where workers are permitted a choice, they often buy more soft drinks than nutritious food.

Home responsibilities are generally recognized to be the second major reason for the higher absenteeism rate of women. No matter how intense a woman's interest in her job may be, her children must be cared for, the work of running a home falls on her, and she must have time for shopping. Both the woman's peace of mind, with the resulting improvement of quality and quantity of work, and her attendance on the job will be greatly improved if the problem is considered and steps are taken for its improvement both by the employer and the community.

The employer's main contribution will be in planning hours and shifts of work with the women's point of view in mind, and in placing individual women on the shifts most suitable for their requirements. It is generally accepted that night work is highly undesirable for women. However, when women have to be used on second or third shifts, some employers have adopted the practice of rotating shifts to distribute the burden of night work and equalize employment conditions. The concensus of health and labor authorities is that shifts should not be changed as often as 2 or 3 weeks, nor at intervals so long as to develop chronic fatigue of the night worker. The most desirable frequency will depend to a degree on plant conditions, and all possible measures should be taken to protect the workers' health when night work is necessary.

However, the wartime employment of women, particularly of housewives with small children, creates problems which cannot be successfully attacked from only one angle or by a single group. The best results have been achieved when all elements in the community have cooperated and worked together.

Not only as a factor in absenteeism but also from the broader point of view of individual and community welfare, the care of small children is the most important home duty of any working mother. The Office of Community War Services and other governmental agencies, and welfare, church, social, service and trade union organizations have rendered great service in this field by opening and expanding day nurseries, kindergartens, and after school play centers.

Many of these organizations have also been instrumental in providing recreational facilities for women workers. The lack of opportunity for normal relaxation and social activity is definitely related to the discontent and absenteeism of many workers. The problem is specially acute in the case of night shift workers.

In order that working women may be able to shop without taking time off from work, Merchants Associations in many towns and cities have agreed to change shopping hours so that stores remain open at least one night a week. Similarily doctors, dentists, lawyers, banks, and beauty parlors have cooperated by changing business hours to accommodate industrial workers.

However, in many communities, particularly those which war production has turned into boom centers, the inadequacy of community services and facilities is a very real cause for dissatisfaction and absenteeism. Although this has not been generally accepted as being an employer responsibility, the influential industrialist can do much by pointing out the needs and marshalling the community resources into action.

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In many areas, because the local labor market has been literally drained of men and the housing situation prohibits the importation of additional persons, the question of whether or not to employ women has become academic. Women constitute the main supply of labor in these communities. In other areas, where the labor shortage is not so severe, there is still some choice in the sex of workers to be hired, but the employment of well qualified women should be urged as part of a foresighted, long range labor utilization program.

The problems involved in the employment of women are neither as numerous nor as complicated as they are traditionally thought to be. The experience of the majority of plants has been that women generally are highly satisfactory workers, and that they bring an enthusiasm and an eagerness to learn which contribute greatly to the morale of the entire working force.

This seems to be the field in labor relations in which the greatest results can be achieved with the least effort, but this effort to be most effective should take the form of intelligent and energetic planning from the very beginning, preferably before any women are employed. This report has attempted to present the various aspects of the major questions involved in the belief that this type of approach may assist analysts, personnel workers, and employers in the constructive planning which must be done at the local level to meet each individual plant's situation.

The recruitment of women workers presents problems of a somewhat different nature and has not been incorporated in this statement. However, here again, the great need is for effective planning based on an understanding of the group to which the appeal is addressed.

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WOMEN'S BUREAU
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JOB FAMILY SERIES • No. O-88

Occupations

Related to

CLOCK AND WATCH REPAIRMEN

DIVISION OF OCCUPATIONAL ANALYSIS AND MANNING TABLES • WASHINGTON, D. C.
January 1944

OCCUPATIONS RELATED TO CLOCK AND WATCH REPAIRMEN

This Job Family lists occupations related to the work of CLOCK AND WATCH REPAIRMEN, given in groups in the order of their relationship.

Depending upon the amount of relationship between the related job and the work of clock and watch repairing, workers with experience in the related occupations may be suitable for (1) immediate transfer to the work of clock and watch repairing with little or no additional training, (2) transfer to the work of clock and watch repairing after brief training, or (3) complete training to prepare them for such work, utilizing the skills they may have acquired in previous work.

The transfer or training of workers on the basis of the relationships shown in the Job Family will, it is believed, provide for utilization of skills, knowledges and abilities developed by the workers on previous jobs, and will also allow for considerable savings in the training necessary for the worker to reach satisfactory performance in the new occupation.

Careful evaluation of the job and worker requirements of CLOCK AND WATCH REPAIRMEN has formed the basis for the selection of related jobs to be included in the Job Family. Data on the work done, the tools, machines, and other work-aids used, and the special knowledges and workers characteristics required for all of the occupations listed have been obtained from job analyses prepared through observation of the occupations in numerous establishments throughout the country. Many occupations in all types of work were compared with these of CLOCK AND WATCH REPAIRMEN in the process of selecting the jobs listed here.

Certain factors should be considered, however, in the use of the Job Family. A particular instance of an occupation may differ somewhat from the average picture used in determining the relationships given here. Previous experience of workers in addition to that in the related occupation may affect the suitability of the worker for transfer, as may individual differences in level of performance in the related job and in adaptability to new work. Wage differentials among the occupations must also be considered in making transfers.

In Section 1 of the Job Family are listed the occupations which are related to the occupations of CLOCK AND WATCH REPAIRMEN. The occupations are identified by code numbers and titles which are defined in the *Dictionary of Occupational Titles*, Part I and its Supplement (U. S. Government Printing Office, Washington, D. C.). Each group of occupations is successively less related to the base occupations; however, within each group or subgroup, the occupations are listed only in order of the assigned code numbers and are believed to be equally related to the base occupations.

Section 2 of the Job Family is a tabular analysis of the CLOCK AND WATCH REPAIRMEN and of each group of related jobs in terms of the job and worker requirements significant in clock and watch repairing. From this analysis can be determined in what ways and to how great an extent an occupation in one of the related groups is similar to the base occupations.

Section 3 of the Job Family is a training data table which presents an estimate of the type of training which would be required to equip a worker from a related occupation in each group for performance as a CLOCK AND WATCH REPAIRMAN, and an estimate of the time that would be saved by using a worker with that type of related experience instead of a completely green worker. This table will serve to supplement the information in Section 2, by indicating in what ways and to what extent the related jobs differ from the work of clock and watch repairing and how that difference may be made up by training.

Appended to the Job Family is an index of the occupations included, in code number order, and a listing of the physical demands and working conditions usually associated with each occupation. The index should prove useful in referring to the Job Family for specific problems, and the physical demands data may assist in instances where the workers being considered are handicapped in some way.

In order to make clear the significant job and worker requirements of CLOCK AND WATCH REPAIRMEN, and also to define the range of activity treated in this Job Family, a brief description of the duties of CLOCK AND WATCH REPAIRMEN follows:

> CLOCK AND WATCH REPAIRMEN repair and adjust timepieces, inserting new main or hair springs, resetting pivots, truing up the balance wheels, changing the position of the hair spring or pendulum adjustment, and performing related tasks. They grind down, reshape, and polish old parts and fabricate new parts on a small lathe, using a wide variety of hand cutting tools including reamers, scrapers, and cutters, and polishing and dressing wheels, measuring the workpiece at frequent intervals as it is formed or cut, using precision measuring devices such as calipers and gages. They perform incidental duties such as cleaning watch and clock parts in various solvents, replacing and redecorating clock and watch faces, replacing or repairing miscellaneous items such as wrist bands, and demagnetizing magnetized timepieces. CLOCK AND WATCH REPAIRMEN frequently shape and grind their own lathe-cutting and hand tools.

Section 1

GROUPS OF RELATED OCCUPATIONS

TABLE I

CLOCK AND WATCH REPAIRMAN

4–71.510	WATCHMAKER CLOCKMAKER TIME-CLOCK REPAIRMAN I

TABLE II

SKILLED OCCUPATIONS IN CLOCK AND WATCH MANUFACTURE

4–72.011	FOX-LATHE OPERATOR
4–72.012	UNDERTURNER
4–72.013	WHEEL CUTTER
4–72.014	DAMASCENER
4–72.111	CASER III
4–72.112	TRAINER II
4–72.211	FINISHER
4–72.212	TIMER I
4–72.217	BALANCE TRUER
4–72.218	FINAL INSPECTOR IX
4–78.676	INSPECTOR

TABLE III

MECHANICS AND REPAIRMEN, SMALL MECHANICAL DEVICES

A—Involving Use of a Lathe

4–75.130	INSTRUMENT MAKER II
4–93.771	ASSEMBLER
5–13.352	BRASS-BAND-INSTRUMENT MAKER
5–83.542	GUNSMITH
5–83.901	MACHINIST, CAMERA
5–83.971	INSTRUMENT REPAIRMAN I
5–83.972	INSTRUMENT MAN IV

B—Not Involving Use of a Lathe

4–52.481	ORDNANCEMAN I
4–93.371	LOCK ASSEMBLER III
5–53.270	TELEGRAPHIC-TYPEWRITER REPAIRMAN
5–83.111	OFFICE-MACHINE SERVICEMAN
5–83.121	ACCOUNTING-MACHINE SERVICEMAN
5–83.122	ADDING-MACHINE SERVICEMAN
5–83.123	CALCULATING-MACHINE SERVICEMAN
5–83.124	CASH-REGISTER SERVICEMAN
5–83.125	DUPLICATING-MACHINE SERVICEMAN
5–83.126	STATISTICAL-MACHINE SERVICEMAN
5–83.127	TYPEWRITER SERVICEMAN
5–83.461	GAS-METER REPAIRMAN
5–83.465	METER REPAIRMAN
5–83.471	WATER-METER REPAIRMAN
5–83.541	ARMORER
5–83.551	LOCKSMITH I
5–83.901	CAMERA REPAIRMAN I
5–83.973	INSTRUMENT INSPECTOR I
6–78.634	ELECTRICAL ASSEMBLER II
6–94.411	ASSEMBLER
6–94.656	SPRAY-GUN ASSEMBLER
6–98.710	ASSEMBLY ADJUSTER
7–09.327	PROJECTOR ASSEMBLER
7–09.328	CAMERA ASSEMBLER
7–81.610	CARBURETOR MAN II
7–81.910	SPEEDOMETER REPAIRMAN

TABLE IV

MECHANICS AND REPAIRMEN, LARGE UNITS

3–35. 10	FARM MECHANIC
4–75. 120	MACHINIST, BENCH
4–75. 150	MACHINIST, OUTSIDE
4–94. 351	CASE ASSEMBLER I
5–03. 540	DETAIL ASSEMBLER II
5–03. 572	MAJOR-ASSEMBLY INSTALLER
5–78. 100	MILLWRIGHT I
5–80. 100	AIRPLANE MECHANIC I
5–80. 120	AIRCRAFT MECHANIC
5–80. 130	AIRCRAFT-ENGINE MECHANIC
5–80. 352	ENGINEMAN II
5–80. 450	HYDRAULIC-FIELD-SERVICE MECHANIC
5–80. 800	AIRSHIP MECHANIC
5–81. 010	AUTOMOBILE MECHANIC
5–81. 020	MOTORCYCLE REPAIRMAN
5–81. 030	TRUCK MECHANIC
5–81. 040	TRACTOR MECHANIC
5–81. 610	AUTOMOBILE MECHANIC, MOTOR I
5–83. 321	KNITTER MECHANIC
5–83. 322	KNITTING-MACHINE FIXER
5–83. 324	MACHINE FIXER III
5–83. 325	SEAMER-MACHINE FIXER
5–83. 326	COMB MAKER II
5–83. 545	AIRCRAFT-ARMAMENT MECHANIC
5–83. 641	BREAKER REPAIRMAN
	BYPRODUCTS-PUMP PACKER
	CELLOPHANE-CASTING-MACHINE REPAIRMAN
	CIGAR-MAKING-MACHINE MECHANIC

TABLE IV—Continued

MECHANICS AND REPAIRMEN, LARGE UNITS—Continued

5–83. 641	CIGARETTE-MAKING-MACHINE ADJUSTER
	CONSTRUCTION-EQUIPMENT MECHANIC
	CONVEYOR MAINTENANCE MAN
	CUTTING-MACHINE MECHANIC
	DONKEY DOCTOR
	ELECTRIC-SHOVEL-CRANE MAN
	ELECTRIC-WELDING-MACHINE REPAIRMAN
	FIELD MECHANIC
	FILLING-AND-CAPPING-MACHINE SET-UP MAN
	FITTER-UP III
	GAS-WELDING-EQUIPMENT REPAIRMAN
	MACHINE-REPAIR FLOORMAN
	MACHINIST, LINOTYPE
	MAINTENANCE MAN, ENGINE
	MILL-SET-UP MAN
	PACKING-MACHINE MECHANIC
	PNEUMATIC-TOOL REPAIRMAN
	PNEUMATIC-TUBE REPAIRMAN
	POWER-SEWING-MACHINE ADJUSTER
	PUMP SERVICEMAN
	PUMPMAN V
5–83. 641	RECORD-PRESS ADJUSTER
	REGISTER REPAIRMAN
	REPAIRMAN II
	ROLL FILLER
	SCALE REPAIRMAN
	SEAMER MECHANIC
	SEWING-MACHINE REPAIRMAN
	SPRAY-GUN REPAIRMAN
	STEAM-HAMMER REPAIRMAN
	STRIPPING-MACHINE MECHANIC
	TIPPLE REPAIRMAN
	WATER-PUMP SERVICEMAN
	WRAPPING-MACHINE MECHANIC I
	WRAPPING-MACHINE MECHANIC II
5–83. 642	MACHINIST, MARINE GAS-ENGINE
5–83. 643	MOTORBOAT MECHANIC
5–83. 931	DIESEL MECHANIC
6–78. 632	FLOOR ASSEMBLER
6–94. 653	VENDING-MACHINE ASSEMBLER
7–00. 927	COIN-MACHINE ASSEMBLER
7–02. 312	MOTOR INSTALLER
7–81. 640	HEAVY REPAIRMAN
7–83. 325	FARM-MACHINERY-SET-UP MAN
7–83. 326	MACHINE ADJUSTER III
7–83. 910	RIGGING-LOFT REPAIRMAN

TABLE V

SEMISKILLED OCCUPATIONS IN CLOCK AND WATCH MANUFACTURE

6–72. 012	PINION POLISHER
6–72. 015	POINTER-MACHINE OPERATOR
6–72. 031	WHEEL TRIMMER
6–72. 098	SPRING LAYER
6–72. 113	STEM FITTER
6–72. 114	BENCH HAND X
6–72. 115	STUD HAIRSPRINGER
6–72. 121	BARREL FINISHER
6–72. 126	JEWEL SETTER II
6–72. 198	DIALER
6–72. 211	MATCHER
6–72. 212	POISE BALANCER
6–72. 213	TRUER
6–72. 216	BALANCE-STAFF INSPECTOR
6–72. 217	ESCAPEMENT MATCHER
6–72. 221	FINAL INSPECTOR, CASING
6–72. 230	HAIRSPRING TRUER
6–72. 248	RATING-MACHINE OPERATOR
6–72. 260	WATCH-DIAL STONER
6–72. 296	STONER II
6–72. 298	PIVOTER

TABLE VI

ASSEMBLERS AND REPAIRMEN, NONMECHANICAL

A—Involving Use of Machine Tools

4–36.010	LOCK ASSEMBLER II
4–36.220	OPERATING-TABLE ASSEMBLER
4–71.010	JEWELER
4–94.101	CHANDELIER MAKER
6–72.331	PREPARER, MAKING DEPARTMENT

B—Not Involving Use of Machine Tools

4–36.210	HYDRAULIC-CHAIR ASSEMBLER
4–72.311	BRACELET MAKER
4–72.312	BROOCH MAKER
4–72.313	LOCKET MAKER
4–72.321	BENCH HAND VII
4–94.610	REED MAKER II
4–99.172	POWER - TRANSFORMER ASSEMBLER
5–03.552	MAJOR ASSEMBLER
5–03.554	SUBASSEMBLER III
5–03.562	SUBASSEMBLY INSTALLER I
5–08.075	PRESCRIPTION-LENS MOUNTER
5–09.410	ORTHOPEDIC TECHNICIAN
5–09.420	ARTIFICIAL-LIMB ASSEMBLER
5–09.430	ARTIFICIAL-LIMB MAKER II
5–83.211	MUSICAL - INSTRUMENT REPAIRMAN
5–83.221	DRUM REPAIRMAN
5–83.222	PIANO REPAIRMAN
5–83.224	WIND-INSTRUMENT REPAIRMAN
5–83.225	PIPE-ORGAN INSTALLER
5–83.905	TECHNICAL-MAINTENANCE MAN
6–36.061	TICKET-CHOPPER ASSEMBLER
6–36.860	LOCK MAN
6–72.312	ASSEMBLER
6–72 313	BRACELET MAKER, NOVELTY
6–72.314	BROOCH MAKER, NOVELTY
6–78.631	FRAME ASSEMBLER III
6–94.111	ASSEMBLER II
6–94.114	BRASS ASSEMBLER II
6–98.010	CHASSIS ASSEMBLER II
6–98.120	INSTALLER II
6–98.140	MICA-CONDENSER ASSEMBLER
6–98.240	TRANSFORMER ASSEMBLER II
7–00.921	ASSEMBLER II
7–00.928	ASSEMBLER III
7–00.938	DETAIL-ELECTRICAL ASSEMBLER
7–02.311	GENERAL ASSEMBLER I
7–02.321	SUBASSEMBLER I
7–03.542	DETAIL ASSEMBLER I
7–03.552	SUBASSEMBLER II
7–03.562	SUBASSEMBLY INSTALLER II

TABLE VII

HAND-FED LATHE-TYPE MACHINE OPERATORS

A—Metal

4–72.317	SPINNER V
5–72.511	FINISHER
4–72.512	POLISHER
4–78.012	SPEED-LATHE OPERATOR
4–94.201	SPINNER IV
5–84.120	TOOL GRINDER I
6–72.465	RUBBER-OFF II
6–77.015	SCRATCH BRUSHER
6–77.020	BUFFER I
6–77.060	POLISHER II
6–77.710	BENCH GRINDER
6–78.005	LATHE HAND V
7–84.110	TOOL GRINDER II
7–84.910	GRINDING-WHEEL DRESSER

B—Wood or Glass

4–33.362	SPINDLE CARVER
4–33.363	WOOD TURNER
4–71.250	JEWEL-BEARING MAKER
6–33.111	BELT SANDER
6–33.114	DISK SANDER II
6–33.121	SPINDLE SANDER
6–33.123	VARIETY SANDER
6–65.210	GLASS GRINDER
6–65.220	GLASS POLISHER
6–72.810	JEWEL-BEARING GRINDER
6–72.814	JEWEL-BEARING BROACHER
6–72.815	JEWEL-BEARING POLISHER

TABLE VIII

MACHINE-TOOL OPERATORS

4–78.011	ENGINE-LATHE OPERATOR I
4–78.021	TURRET-LATHE OPERATOR
4–78.022	VERTICAL-TURRET-LATHE OPERATOR
4–78.031	MILLING-MACHINE OPERATOR II
4–78.041	BORING-MILL OPERATOR
4–78.042	HORIZONTAL-BORING-AND-MILLING-MACHINE OPERATOR
4–78.043	JIG-BORING-MACHINE OPERATOR
4–78.061	SHAPER OPERATOR I
4–78.062	SHAPER OPERATOR, PORTABLE
4–78.063	DRAW-CUT-SHAPER OPERATOR
4–78.071	PLANER OPERATOR II
4–78.111	PROFILING-MACHINE OPERATOR I
4–78.131	GEAR-GENERATOR OPERATOR I
4–78.132	GEAR-HOBBER OPERATOR I
4–78.133	GEAR-MILLING-MACHINE OPERATOR
4–78.134	GEAR-SHAPER OPERATOR I
4–78.291	FILER, MACHINE
4–78.411	HONING-MACHINE OPERATOR
4–78.511	CYLINDRICAL-GRINDER OPERATOR I
4–78.512	INTERNAL-GRINDER OPERATOR I
4–78.513	SURFACE-GRINDER OPERATOR I
4–78.525	EDGE-GRINDER OPERATOR

TABLE IX

ELECTRICAL-DEVICES MECHANICS

4–97.410	ELECTRICIAN, MACHINE SHOP
4–97.420	ELECTRICAL REPAIRMAN I TIME-CLOCK REPAIRMAN II
4–97.910	ELECTRICIAN, AIRPLANE I
4–97.915	ELECTRICIAN, AIRPLANE II
4–98.050	RADIO-EQUIPMENT ASSEMBLER, SPECIAL
5–00.511	ELECTRICAL ASSEMBLER I
5–00.912	INSTRUMENT MAKER I
5–00.933	ELECTRICAL ADJUSTER
5–53.010	CENTRAL-OFFICE INSTALLER
5–53.020	PRIVATE-BRANCH-EXCHANGE INSTALLER
5–53.030	STATION INSTALLER II
5–53.040	STATION INSTALLER, SENIOR
5–53.050	TELEGRAPH INSTALLER
5–53.060	TELEGRAPH-REPEATER INSTALLER
5–53.070	TELEGRAPHIC-TYPEWRITER INSTALLER
5–53.210	COMBINATION MAN
5–53.235	MANUAL-EQUIPMENT REPAIRMAN, CENTRAL OFFICE
5–53.240	PRIVATE-BRANCH-EXCHANGE REPAIRMAN
5–53.295	ELECTRICIAN, OFFICE
5–81.410	AUTOMBILE-GENERATOR REPAIRMAN
5–83.041	ELECTRICAL-APPLIANCE SERVICEMAN
5–83.042	HOUSEHOLD-APPLIANCE-INSTALLATION MAN
5–83.411	RADIO REPAIRMAN I
5–83.413	TROUBLE SHOOTER VI
5–83.415	PUBLIC-ADDRESS SERVICEMAN
5–83.432	ELECTRIC-MOTOR ASSEMBLER AND TESTER
5–83.445	ELECTRICIAN, RADIO I
5–83.447	RADIO MECHANIC II
5–83.452	ELECTRIC-METER TESTER
5–83.975	ELECTRICAL-INSTRUMENT REPAIRMAN
6–98.170	PHOTOPHONE ASSEMBLER
6–98.210	RADIO REPAIRMAN II
6–98.310	RADIO-TRANSMITTER ASSEMBLER
7–53.210	ELECTRIC-CLOCK REPAIRMAN
7–83.415	RADIO INSTALLER, AUTOMOBILE

TABLE X

PRECISION INSPECTORS

4–76.220	TOOL INSPECTOR
4–78.671	INSPECTOR
4–94.341	ALL-ROUND INSPECTOR
4–94.343	MACHINE-PARTS INSPECTOR
4–94.344	MAJOR-ASSEMBLY INSPECTOR
5–05.512	YARD INSPECTOR
5–79.040	SALVAGE INSPECTOR I
6–54.036	PRIMER INSPECTOR
6–54.037	INSPECTOR II
6–54.038	INSPECTOR I
6–78.672	GAGER I
6–78.673	SHELL INSPECTOR
6–78.675	METAL-FITTINGS INSPECTOR
6–78.676	SHEET-METAL INSPECTOR II
6–78.677	TUBING INSPECTOR II
6–78.685	FINAL-PARTS INSPECTOR
6–82.210	CORE CHECKER
6–82.970	MOLD CHECKER I
6–93.077	SHEET-TIN INSPECTOR
6–98.030	CHECK INSPECTOR
6–99.431	SHAFT INSPECTOR
7–00.222	MICROMETER INSPECTOR
7–00.912	CIRCULATING-PROCESS INSPECTOR
7–00.940	INSPECTOR I
7–02.711	CARBURETOR INSPECTOR
7–08.020	LENS EXAMINER
7–08.032	LENS INSPECTOR II
7–10.013	INSPECTOR

Section 2

RELATIONSHIPS AMONG GROUPS OF OCCUPATIONS RELATED TO CLOCK AND WATCH REPAIRMEN

Table	Type of job	Work done	Materials used	Work aids	Worker characteristics	Special knowledges
I	Clock and Watch Repairmen.	1. Assembling and disassembling. 2. Repairing. 3. Lathe operating. 4. Adjusting. 5. Inspecting.	Timepieces and their parts.	1. Small hand tools. 2. Jeweler's lathe. 3. Calipers and gages.	1. Finger and manual dexterity. 2. Eye-hand coordination. 3. Visual acuity. 4. Perception of form and estimation of size. 5. Touch and muscular discrimination. 6. Understanding of mechanical devices.	1. Principles of mechanics. 2. Familiarity with the construction and repair of timepieces. 3. Familiarity with the working properties of metal.
II	Skilled occupations in Clock and Watch Manufacture.	1. As in table I; or 2. As in table I; or 3. As in table I; or 4. As in table I; or 5. As in table I.	As in table I.	1. As in table I and/or 2. As in table I and/or 3. As in table I.	1. As in table I. 2. As in table I. 3. As in table I. 4. As in table I. 5. As in table I. 6. Less than table I.	1. Less than table I. 2. Less than table I. 3. Less than table I.
III	Mechanics and Repairmen, Small Mechanical Devices.					
	A. Involving use of a lathe.	1. As in table I. 2. As in table I. 3. Different from table I. 4. As in table I. 5. As in table I.	Complicated instruments and devices.	1. As in table I. 2. Different from Table I. 3. As in table I.	1. As in table I. 2. As in table I. 3. As in table I. 4. As in table I. 5. As in table I. 6. As in table I.	1. As in table I. 2. Familiarity with the construction and maintenance of one or more instruments. 3. As in table I.
	B. Not involving use of a lathe.	1. As in table I. 2. As in table I. 3. As in table I. 4. As in table I. 5. As in table I.	Meters, instruments, and other small mechanical devices.	1. As in table I. 2. None. 3. Less than table I.	1. As in table I. 2. As in table I. 3. As in table I. 4. As in table I. 5. As in table I. 6. As in table I.	1. Less than table I. 2. Familiarity with construction and maintenance of 1 or more small mechanical units. 3. Less than table I.
IV	Mechanics and Repairmen, Large Units.	1. As in table I. 2. As in table I. 3. None. 4. As in table I. 5. As in table I.	Large mechanical units, including machinery.	1. Similar to table I. 2. None. 3. Different from table I.	1. Less than table I. 2. As in table I. 3. Less than table I. 4. Less than table I. 5. Less than table I. 6. As in table I.	1. As in table I. 2. Familiarity with construction and maintenance of 1 or more large machines. 3. Much less than table I.
V	Semi-skilled occupations in Clock and Watch Manufacture.	1. Less than table I; or 2. Less than table I; or 3. Less than table I; or 4. Less than table I; or 5. Less than table I.	Single watch or clock parts.	1. As in table I; or 2. As in table I; or 3. As in table I.	1. As in table I. 2. As in table I. 3. As in table I. 4. As in table I. 5. As in table I. 6. Less than table I.	1. Much less than table I. 2. Much less than table I. 3. Less than table I.
VI	Assemblers and Repairmen, Non-Mechanical.					
	A. Involving use of machine tools.	1. Different from table I. 2. Different from table I. 3. Different from table I. 4. Different from table I. 5. Different from table I.	Metal parts.	1. Similar to table I. 2. Different from table I. 3. As in table I.	1. As in table I. 2. As in table I. 3. As in table I. 4. As in table I. 5. As in table I. 6. Less than table I.	1. Less than table I. 2. None. 3. As in table I.
	B. Not involving use of machine tools.	1. Different from table I. 2. Different from table I. 3. None. 4. Different from table I. 5. Different from table I.	Metal parts.	1. Similar to table I. 2. None. 3. As in table I.	1. As in table I. 2. As in table I. 3. As in table I. 4. As in table I. 5. As in table I. 6. Less than table I.	1. Less than table I. 2. None. 3. As in table I.
VII	Hand-Fed Lathe-Type Machine Operators.					
	A. Metal.	1. None. 2. None. 3. As in table I. 4. None. 5. Less than table I.	Small metal parts.	1. None. 2. Similar to table I. 3. Less than table I.	1. As in table I. 2. As in table I. 3. As in table I. 4. As in table I. 5. As in table I. 6. Less than table I.	1. None. 2. None. 3. As in table I.

RELATIONSHIPS AMONG GROUPS OF OCCUPATIONS RELATED TO CLOCK AND WATCH REPAIRMEN—Continued

Table	Type of job	Work done	Materials used	Work aids	Worker characteristics	Special knowledges
VII	B. Wood or glass.	1. None. 2. None. 3. As in table I. 4. Less than table I. 5. Less than table I.	Wood or glass parts.	1. None. 2. Similar to table I. 3. Less than table I.	1. As in table I. 2. As in table I. 3. As in table I. 4. As in table I. 5. As in table I. 6. Less than table I.	1. None. 2. None. 3. Different from table I.
VIII	Machine-Tool Operators.	1. None. 2. Less than table I. 3. Different from table I. 4. Different from table I. 5. As in table I.	Metal parts.	1. Similar to table I. 2. Different from table I. 3. As in table I.	1. As in table I. 2. As in table I. 3. As in table I. 4. As in table I. 5. As in table I. 6. Less than table I.	1. Less than table I. 2. None. 3. As in table I.
IX	Electrical Devices Mechanics.	1. Different from table I. 2. Different from table I. 3. None. 4. Different from table I. 5. Different from table I.	Electrical devices.	1. Similar to table I. 2. None. 3. Different from table I.	1. As in table I. 2. As in table I. 3. As in table I. 4. As in table I. 5. Less than table I. 6. Understanding of electrical devices.	1. Principles of electricity. 2. Familiarity with 1 or more electrical devices and their mechanical parts. 3. Much less than table I.
X	Precision Inspectors.	1. None. 2. None. 3. None. 4. Less than table I. 5. As in table I.	Variety of parts and devices.	1. Less than table I. 2. None. 3. As in table I.	1. As in table I. 2. As in table I. 3. As in table I. 4. As in table I. 5. As in table I. 6. Less than table I.	1. Less than table I. 2. Familiarity with precision dimensional measuring techniques and instruments. 3. Some familiarity with the characteristics of metal or other material.

Section 3

PROBABLE TRAINING REQUIRED FOR WORKERS FROM RELATED OCCUPATIONS

Table	Type of job	Probable minimum training required	Estimated time saved
I	Clock and Watch Repairmen.		100%.
II	Skilled occupations in Clock and Watch Manufacture.	Aspects of clock and watch repair not previously dealt with	80-95%.
III	Mechanics and Repairmen, Small Mechanical Devices.		
	A. Involving use of a lathe	Construction and repair of timepiece movements, but on the basis of familiarity with similar small complex mechanical devices.	80-90%.
	B. Not involving use of a lathe.	As for table III-A, and operation of a small hand-fed lathe to grind, turn, and shape parts.	65-80%.
IV	Mechanics and Repairmen, Large Units.	Construction and repair of timepiece movements, adaptation to use of small hand tools and measuring devices, and operation of a jeweler's lathe, but on the basis of a good understanding of the principles of mechanics and mechanical devices, and use of similar hand tools and measuring devices.	50-65%.
V	Semi-skilled occupations in Clock and Watch Manufacture.	Extensive training in clock and watch repairing, including principles of mechanics and construction of a wide variety of different movements, but on the basis of experience in one limited aspect of clock and watch manufacture such as inspection, hand tool adjusting or finishing, or machining of parts, and on the basis of familiarity with watch and clock parts, and dexterity in manipulating them.	40-55%.
VI	Assemblers and Repairmen, Non-Mechanical.		
	A. Involving use of Machine Tools.	Principles of machines; construction and repair of timepiece parts and movements; but on the basis of experience in assembling small complex structural units, fabrication of parts for them on machine tools, and inspection and measurement of parts.	40-50%.
	B. Not involving use of Machine Tools.	As for table VI-A and also operation of a small hand-fed lathe	35-45%.
VII	Hand-Fed Lathe-Type Machine Operators.		
	A. Metal.	Thorough training in most aspects of clock and watch repairing, but on the basis of knowledge of working properties of metal and ability to operate a hand-fed lathe or lathe-type machine to fabricate small metal parts.	25-35%.
	B. Wood or glass.	As for table VI-A, and on the working properties of metal for parts fabrication.	15-25%.
VIII	Tool Operators.	Thorough training in clock and watch repairing, but on the basis of wide experience in machine shop practice and technique, a good understanding of metal parts fabrication, a fairly good understanding of mechanics, and ability to work to close tolerances.	15-25%.
IX	Electrical Devices Mechanics.	Thorough training in clock and watch repairing, but on the basis of ability to use a wide variety of hand tools to assemble and disassemble metal units, and some familiarity with mechanical elements in electrical and communications devices.	10-20%.
X	Precision Inspectors.	Thorough training in clock and watch repairing, but on the basis of ability to work to very close tolerances in precision measuring and inspection of small units, and occasionally use of hand tools to make minor repairs or adjustments.	10-15%.

INDEX OF OCCUPATIONS

Physical Demands and Working Conditions

On the following pages are listed in code number order all of the occupations included in this Job Family. Opposite each occupational code is given the title of the occupation and the number of the table in which it appears in the Job Family.

In addition, the physical demands and working conditions for each of these occupations are given in tabular form. The letter X is used to indicate that an element is present on a particular job. A blank space denotes that that element is not present on the job.

	Code No.	Title	Table No.	Walking	Jumping	Running	Balancing	Climbing	Crawling	Standing	Turning	Stooping	Crouching	Kneeling	Sitting	Reaching	Lifting	Carrying	Throwing	Pushing	Pulling	Handling	Fingering
1	3-35. 10	FARM MECHANIC	IV	X						X	X	X				X	X			X	X	X	X
2	4-33. 362	SPINDLE CARVER	VII	X						X	X	X				X	X	X		X	X	X	X
3	4-33. 363	WOOD TURNER	VII	X						X	X	X				X	X	X		X	X	X	X
4	4-36.010	LOCK ASSEMBLER II	VI	X						X		X				X	X	X		X	X	X	X
5	4-36. 210	HYDRAULIC-CHAIR ASSEMBLER	VI	X						X		X				X	X	X		X	X	X	X
6	4-36. 220	OPERATING-TABLE ASSEMBLER	VI	X						X		X				X	X	X		X	X	X	X
7	4-52. 481	ORDNANCEMAN I	III							X		X				X	X					X	X
8	4-71. 010	JEWELER	VI	X						X		X			X	X				X	X		X
9	4-71. 250	JEWEL-BEARING MAKER	VII	X						X		X			X					X	X	X	X
10	4-71. 510	WATCHMAKER	I	X						X		X			X	X				X	X		X
11		CLOCKMAKER	I	X						X		X			X	X				X	X		X
12		TIME-CLOCK REPAIRMAN I	I	X						X		X			X	X				X	X		X
13	4-72. 011	FOX-LATHE OPERATOR	II	X						X	X	X				X	X	X		X	X	X	X
14	4-72. 012	UNDERTURNER	II	X						X	X	X				X	X	X		X	X	X	X
15	4-72. 013	WHEEL CUTTER	II	X						X	X	X				X	X	X		X	X	X	X
16	4-72. 014	DAMASCENER	II	X						X	X	X				X				X	X	X	X
17	4-72. 111	CASER III	II	X						X	X	X			X	X	X	X		X	X	X	X
18	4-72. 112	TRAINER II	II	X						X	X	X			X	X	X	X		X	X	X	X
19	4-72. 211	FINISHER	II	X						X	X				X	X				X	X	X	X
20	4-72. 212	TIMER I	II	X						X	X				X	X						X	X
21	4-72. 217	BALANCE TRUER	II	X						X		X			X	X						X	X
22	4-72. 218	FINAL INSPECTOR IX	II	X						X		X			X					X	X	X	X
23	4-72. 311	BRACELET MAKER	VI	X						X		X			X	X						X	X
24	4-72. 312	BROOCH MAKER	VI	X						X		X			X	X				X	X	X	X
25	4-72. 313	LOCKET MAKER	VI	X						X		X			X	X						X	X
26	4-72. 317	SPINNER V	VII	X						X		X				X				X	X	X	X
27	4-72. 321	BENCH HAND VII	VI	X						X		X			X	X						X	X
28	4-72. 511	FINISHER	VII	X						X		X			X	X				X	X	X	X
29	4-72. 512	POLISHER	VII	X						X		X			X	X				X	X	X	X
30	4-75. 120	MACHINIST, BENCH	IV	X						X	X	X				X	X	X		X	X	X	X
31	4-75. 130	INSTRUMENT MAKER II	III	X						X		X			X	X	X					X	X
32	4-75. 150	MACHINIST, OUTSIDE	IV	X						X	X	X				X				X	X	X	X
33	4-76. 220	TOOL INSPECTOR	X	X						X	X	X				X	X	X		X	X	X	X
34	4-78. 011	ENGINE-LATHE OPERATOR I	VIII	X						X	X	X				X	X	X		X	X	X	X
35	4-78. 012	SPEED-LATHE OPERATOR	VII	X						X	X	X				X	X	X				X	X
36	4-78. 021	TURRET-LATHE OPERATOR	VIII	X						X	X	X				X	X	X		X	X	X	X
37	4-78. 022	VERTICAL-TURRET-LATHE OPERATOR	VIII	X						X	X	X				X	X	X		X	X	X	X
38	4-78. 031	MILLING-MACHINE OPERATOR II	VIII	X						X	X	X				X	X	X		X	X	X	X
39	4-78. 041	BORING-MILL OPERATOR	VIII	X						X	X	X				X	X	X		X	X	X	X
40	4-78. 042	HORIZONTAL-BORING-AND-MILLING-MACHINE OPERATOR	VIII	X						X	X	X			X	X	X	X		X	X	X	X
41	4-78. 043	JIG-BORING-MACHINE OPERATOR	VIII	X						X		X				X	X			X	X	X	X
42	4-78. 061	SHAPER OPERATOR I	VIII	X						X	X	X				X	X	X		X	X	X	X
43	4-78. 062	SHAPER OPERATOR, PORTABLE	VIII	X						X	X	X				X	X			X	X	X	X
44	4-78. 063	DRAW-CUT-SHAPER OPERATOR	VIII	X						X		X				X	X					X	X

Feeling	Talking	Hearing	Seeing	Color vision	Depth perception	Working speed			Inside	Outside	Hot	Cold	Sudden temperature changes	Humid	Dry	Wet	Dusty	Dirty	Odors	Noisy	Lighting	Pressure	Vibration	Mechanical hazards	Moving objects	Cramped quarters	High places	Exposure to burns	Electrical hazards	Explosives	Radiant energy	Toxic conditions	Working with others	Working around others	Working alone	Oily	Falls	Inorganic dust	
				X	X					X						X	X	X	X	X				X		X										X			1
X		X		X	X				X						X		X	X	X				X	X				X								X			2
X		X		X	X				X						X		X	X	X	X			X	X				X								X			3
					X				X															X															4
									X									X																					5
									X									X		X				X															6
X									X		X								X									X											7
	X			X	X				X								X		X	X								X				X				X			8
		X		X	X				X								X																			X			9
	X	X		X	X				X																											X			10
	X	X		X	X				X																											X			11
	X	X		X	X				X																											X			12
X		X		X	X				X								X	X		X			X	X				X								X			13
X		X		X	X				X								X	X		X			X	X												X			14
X		X		X	X				X								X	X		X			X	X		X										X			15
X					X				X											X			X	X															16
X				X	X				X								X	X						X												X			17
X				X	X				X								X	X						X												X			18
					X				X															X												X			19
					X				X															X												X			20
X					X				X															X												X			21
		X		X	X				X																											X			22
	X	X			X				X										X									X											23
	X	X		X	X				X										X									X											24
	X	X		X	X				X								X		X									X											25
X					X				X								X			X				X															26
	X	X		X	X				X										X									X											27
	X	X							X								X		X	X								X								X			28
	X	X		X					X							X	X		X									X											29
	X	X			X				X									X		X				X				X											30
X					X				X									X																					31
									X	X								X		X			X													X			32
X		X		X	X				X								X	X		X			X					X								X			33
X		X			X				X								X	X		X			X	X												X		X	34
									X								X	X	X	X			X	X												X			35
X		X			X				X								X	X		X			X	X												X		X	36
	X	X			X				X								X	X		X			X	X												X		X	37
X		X			X				X								X	X		X			X	X												X		X	38
X		X		X	X				X								X	X					X	X				X								X			39
	X	X		X	X				X								X	X		X			X	X												X		X	40
	X	X							X								X	X		X			X	X												X			41
X		X			X				X								X	X		X			X	X				X								X		X	42
	X	X			X				X								X			X			X	X												X			43
	X	X			X				X								X			X				X					X							X			44

	Code No.	Title	Table No.	Walking	Jumping	Running	Balancing	Climbing	Crawling	Standing	Turning	Stooping	Crouching	Kneeling	Sitting	Reaching	Lifting	Carrying	Throwing	Pushing	Pulling	Handling	Fingering
1	4-78. 071	PLANER OPERATOR II	VIII	X						X	X	X				X	X	X		X	X	X	X
2	4-78. 111	PROFILING-MACHINE OPERATOR I	VIII	X						X	X	X					X	X		X	X		
3	4-78. 131	GEAR-GENERATOR OPERATOR I	VIII	X						X	X	X				X	X			X	X	X	X
4	4-78. 132	GEAR-HOBBER OPERATOR I	VIII							X		X				X	X			X	X	X	X
5	4-78. 133	GEAR-MILLING-MACHINE OPERATOR	VIII	X						X		X				X	X	X		X	X	X	X
6	4-78. 134	GEAR-SHAPER OPERATOR I	VIII	X						X		X				X	X	X		X	X	X	X
7	4-78. 291	FILER, MACHINE	VIII	X						X	X	X				X	X			X	X	X	X
8	4-78. 411	HONING-MACHINE OPERATOR	VIII	X						X		X				X	X	X		X	X	X	X
9	4-78. 511	CYLINDRICAL-GRINDER OPERATOR I	VIII	X						X	X	X				X	X	X		X	X	X	X
10	4-78. 512	INTERNAL-GRINDER OPERATOR I	VIII	X						X		X				X	X	X		X	X	X	X
11	4-78. 513	SURFACE-GRINDER OPERATOR I	VIII	X						X	X	X			X	X	X	X		X	X	X	X
12	4-78. 525	EDGE-GRINDER OPERATOR	VIII	X						X	X	X				X	X	X		X	X	X	X
13	4-78. 671	INSPECTOR	X	X						X		X			X	X	X			X	X	X	X
14	4-78. 676	INSPECTOR	II	X						X		X			X	X	X			X	X	X	X
15	4-93. 371	LOCK ASSEMBLER III	III	X						X		X			X	X	X	X		X	X	X	X
16	4-93. 771	ASSEMBLER	III	X						X		X			X	X	X	X		X	X	X	X
17	4-94. 101	CHANDELIER MAKER	VI							X		X				X	X					X	X
18	4-94. 201	SPINNER IV	VII	X						X	X	X				X	X	X				X	X
19	4-94. 341	ALL-ROUND INSPECTOR	X	X						X	X	X				X	X	X		X	X	X	X
20	4-94. 343	MACHINE-PARTS INSPECTOR	X	X						X	X	X				X	X	X		X	X	X	X
21	4-94. 344	MAJOR-ASSEMBLY INSPECTOR	X	X						X	X	X				X	X	X		X	X	X	X
22	4-94. 351	CASE ASSEMBLER I	IV	X						X		X				X	X	X		X	X	X	X
23	4-94. 610	REED MAKER II	VI	X						X		X				X	X	X		X	X	X	X
24	4-97. 410	ELECTRICIAN, MACHINE SHOP	IX	X						X	X	X				X	X			X	X	X	X
25	4-97. 420	ELECTRICAL REPAIRMAN I	IX	X				X		X	X	X			X	X	X	X		X	X	X	X
26		TIME-CLOCK REPAIRMAN II	IX	X						X	X	X			X	X	X			X	X	X	X
27	4-97. 910	ELECTRICIAN, AIRPLANE I	IX	X				X		X	X	X			X	X	X	X		X	X	X	X
28	4-97. 915	ELECTRICIAN, AIRPLANE II	IX	X				X		X	X	X			X	X	X			X	X	X	X
29	4-98. 050	RADIO-EQUIPMENT ASSEMBLER, SPECIAL	IX							X		X			X	X				X	X	X	X
30	4-99. 172	POWER-TRANSFORMER ASSEMBLER	VI	X						X	X	X				X	X			X	X	X	X
31	5-00. 911	ELECTRICAL ASSEMBLER I	IX	X						X	X	X				X	X			X	X	X	X
32	5-00. 912	INSTRUMENT MAKER I	IX	X						X	X	X			X	X	X			X	X	X	X
33	5-00. 933	ELECTRICAL ADJUSTER	IX							X	X	X			X	X	X			X	X	X	X
34	5-03. 540	DETAIL ASSEMBLER II	IV	X						X	X	X				X	X	X		X	X	X	X
35	5-03. 552	MAJOR ASSEMBLER	VI	X						X		X				X	X			X	X	X	X
36	5-03. 554	SUBASSEMBLER III	VI	X						X	X	X				X	X			X	X	X	X
37	5-03. 562	SUBASSEMBLY INSTALLER I	VI	X						X	X	X				X	X			X	X	X	X
38	5-03. 572	MAJOR-ASSEMBLY INSTALLER	IV	X						X		X				X	X	X		X	X	X	X
39	5-05. 512	YARD INSPECTOR	X	X						X	X	X				X	X			X	X	X	X
40	5-08. 075	PRESCRIPTION-LENS MOUNTER	VI	X								X			X	X						X	X
41	5-09. 410	ORTHOPEDIC TECHNICIAN	VI							X	X	X			X	X		X				X	X
42	5-09. 420	ARTIFICIAL-LIMB ASSEMBLER	VI							X	X	X			X	X		X				X	X
43	5-09. 430	ARTIFICIAL-LIMB MAKER II	VI	X						X	X	X			X	X	X			X	X	X	X
44	5-13. 352	BRASS-BAND-INSTRUMENT MAKER	III							X		X			X	X	X					X	X

Feeling	Talking	Hearing	Seeing	Color vision	Depth perception	Working speed				Inside	Outside	Hot	Cold	Sudden temperature changes	Humid	Dry	Wet	Dusty	Dirty	Odors	Noisy	Lighting	Pressure	Vibration	Mechanical hazards	Moving objects	Cramped quarters	High places	Exposure to burns	Electrical hazards	Explosives	Radiant energy	Toxic conditions	Working with others	Working around others	Working alone	Oily	Falls	Inorganic dust	
X		X	X		X					X								X	X		X			X	X												X		X	1
			X							X									X		X			X	X												X			2
	X	X	X		X					X											X				X												X			3
X			X							X											X			X	X		X										X			4
X			X		X					X									X					X	X												X		X	5
X			X		X					X									X		X			X	X												X		X	6
	X	X	X		X					X									X		X			X	X												X			7
			X		X					X									X					X	X												X	X	X	8
X		X	X		X					X								X	X		X			X	X												X		X	9
X			X		X					X									X		X			X	X												X			10
X			X		X					X								X	X		X				X												X		X	11
X			X	X	X					X									X		X			X	X												X		X	12
	X	X	X		X					X									X		X				X												X			13
	X	X	X							X																											X			14
	X	X	X		X					X																														15
	X	X	X		X					X											X																X			16
X			X							X															X															17
X			X		X					X									X		X			X	X				X											18
X		X	X	X	X					X								X	X		X			X	X		X		X								X			19
X		X	X	X	X					X								X			X				X				X								X			20
X		X	X	X	X					X								X			X				X				X								X			21
			X							X									X		X																			22
X			X							X									X						X												X			23
	X	X	X															X	X	X										X							X			24
			X							X	X	X	X					X	X		X				X		X	X	X	X							X	X		25
	X	X	X		X														X											X							X			26
			X	X						X	X								X						X		X		X	X								X		27
			X		X					X	X								X						X		X			X								X		28
			X	X						X															X				X	X										29
X	X	X	X		X													X	X	X	X				X					X										30
	X	X	X															X	X								X			X										31
	X	X	X														X	X												X	X									32
			X	X						X											X								X	X							X			33
X			X							X									X	X	X			X			X		X				X				X			34
	X	X	X																																					35
			X							X								X	X		X																			36
			X							X									X		X			X			X													37
			X							X																		X										X		38
	X	X	X															X			X				X												X			39
	X	X	X							X																														40
			X																X																		X			41
			X							X								X	X																					42
	X	X	X															X															X							43
X		X	X							X																														44

	Code No.	Title	Table No.	Walking	Jumping	Running	Balancing	Climbing	Crawling	Standing	Turning	Stooping	Crouching	Kneeling	Sitting	Reaching	Lifting	Carrying	Throwing	Pushing	Pulling	Handling	Fingering
1	5-53. 010	CENTRAL-OFFICE INSTALLER	IX	X						X		X				X	X		X	X	X	X	X
2	5-53. 020	PRIVATE-BRANCH-EXCHANGE INSTALLER	IX	X						X		X			X	X	X	X		X	X	X	X
3	5-53. 030	STATION INSTALLER II	IX	X						X		X			X	X	X		X	X	X	X	X
4	5-53. 040	STATION INSTALLER, SENIOR	IX	X						X		X			X	X	X		X	X	X	X	X
5	5-53. 050	TELEGRAPH INSTALLER	IX	X						X	X	X				X	X			X	X	X	X
6	5-53. 060	TELEGRAPH-REPEATER INSTALLER	IX	X						X		X			X	X	X	X		X	X	X	X
7	5-53. 070	TELEGRAPHIC-TYPEWRITER INSTALLER	IX	X						X		X			X	X	X	X		X	X	X	X
8	5-53. 210	COMBINATION MAN	IX	X						X		X			X	X	X	X		X	X	X	X
9	5-53. 235	MANUAL-EQUIPMENT REPAIRMAN, CENTRAL OFFICE	IX	X						X		X				X	X			X	X	X	X
10	5-53. 240	PRIVATE-BRANCH-EXCHANGE REPAIRMAN	IX	X						X		X				X	X			X	X	X	X
11	5-53. 270	TELEGRAPHIC-TYPEWRITER REPAIRMAN	III	X						X		X			X	X	X	X		X	X	X	X
12	5-53. 295	ELECTRICIAN, OFFICE	IX							X		X			X	X	X			X	X	X	X
13	5-78. 100	MILLWRIGHT I	IV	X						X	X	X			X	X	X			X	X	X	X
14	5-79. 040	SALVAGE INSPECTOR I	X	X				X		X	X	X			X	X	X	X		X	X	X	X
15	5-80. 100	AIRPLANE MECHANIC I	IV	X				X		X	X	X				X	X	X		X	X	X	X
16	5-80. 120	AIRCRAFT MECHANIC	IV	X				X		X	X	X				X	X	X		X	X	X	X
17	5-80. 130	AIRCRAFT-ENGINE MECHANIC	IV	X						X		X				X	X			X	X	X	X
18	5-80. 352	ENGINEMAN II	IV	X				X		X	X	X				X	X	X		X	X	X	X
19	5-80. 450	HYDRAULIC-FIELD-SERVICE MECHANIC	IV	X						X	X	X				X	X			X	X	X	X
20	5-80. 800	AIRSHIP MECHANIC	IV	X				X		X	X	X				X	X	X		X	X	X	X
21	5-81. 010	AUTOMOBILE MECHANIC	IV	X						X	X	X			X	X	X	X		X	X	X	X
22	5-81. 020	MOTORCYCLE REPAIRMAN	IV	X						X	X	X				X	X	X		X	X	X	X
23	5-81. 030	TRUCK MECHANIC	IV	X						X	X	X			X	X	X	X		X	X	X	X
24	5-81. 040	TRACTOR MECHANIC	IV	X						X	X	X			X	X	X	X		X	X	X	X
25	5-81. 410	AUTOMOBILE-GENERATOR REPAIRMAN	IX	X						X	X	X				X				X	X	X	X
26	5-81. 610	AUTOMOBILE MECHANIC, MOTOR I	IV	X						X	X	X			X	X	X	X		X	X	X	X
27	5-83. 041	ELECTRICAL-APPLIANCE SERVICEMAN	IX							X		X			X	X						X	X
28	5-83. 042	HOUSEHOLD-APPLIANCE-INSTALLATION MAN	IX	X						X		X			X	X	X			X	X	X	X
29	5-83. 111	OFFICE-MACHINE SERVICEMAN	III	X						X		X			X	X	X	X		X	X	X	X
30	5-83. 121	ACCOUNTING-MACHINE SERVICEMAN	III	X						X		X			X	X	X			X	X	X	X
31	5-83. 122	ADDING-MACHINE SERVICEMAN	III	X						X		X			X	X	X			X	X	X	X
32	5-83. 123	CALCULATING-MACHINE SERVICEMAN	III	X						X		X			X	X	X			X	X	X	X
33	5-83. 124	CASH-REGISTER SERVICEMAN	III	X						X		X			X	X	X	X		X	X	X	X
34	5-83. 125	DUPLICATING-MACHINE SERVICEMAN	III	X						X		X			X	X	X			X	X	X	X
35	5-83. 126	STATISTICAL-MACHINE SERVICEMAN	III	X						X		X			X	X	X	X		X	X	X	X

Working Conditions

Feeling	Talking	Hearing	Seeing	Color vision	Depth perception	Working speed			Inside	Outside	Hot	Cold	Sudden temperature changes	Humid	Dry	Wet	Dusty	Dirty	Odors	Noisy	Lighting	Pressure	Vibration	Mechanical hazards	Moving objects	Cramped quarters	High places	Exposure to burns	Electrical hazards	Explosives	Radiant energy	Toxic conditions	Working with others	Working around others	Working alone	Oily	Falls	Inorganic dust	
			X		X				X	X								X						X					X										1
			X		X				X									X						X					X										2
					X				X	X								X						X		X	X		X								X		3
			X		X				X	X								X						X		X	X		X								X		4
	X	X	X		X													X		X						X													5
	X	X	X	X					X	X								X						X					X										6
		X	X	X					X															X					X										7
	X	X	X		X				X									X								X													8
	X	X	X		X				X															X					X										9
	X	X	X		X				X																				X										10
	X	X	X	X														X						X					X							X			11
			X	X					X																				X										12
X	X	X	X		X				X	X								X		X				X		X		X				X							13
	X			X	X				X									X	X	X			X	X		X	X	X				X				X	X		14
X			X	X	X				X	X								X	X	X			X	X		X	X		X							X	X		15
X			X	X	X				X	X								X	X	X				X		X	X									X	X		16
		X	X																																				17
X			X	X	X				X	X								X	X	X				X		X	X									X	X		18
	X	X	X						X	X								X		X	X			X		X		X		X						X			19
X			X	X	X				X	X								X	X	X			X	X		X	X		X							X	X		20
	X	X	X		X				X									X	X	X			X	X		X			X			X				X			21
X		X	X	X	X				X	X								X	X	X			X	X		X		X								X	X		22
	X	X	X		X				X									X	X	X			X	X		X			X			X				X			23
	X	X	X		X				X									X	X	X			X	X		X			X			X				X			24
			X						X	X								X	X	X			X	X		X										X			25
	X	X	X		X				X									X	X	X			X	X		X			X			X				X			26
			X						X									X											X										27
	X	X	X						X									X		X						X										X			28
X			X						X									X						X												X			29
X			X						X									X						X												X			30
X			X						X									X																		X			31
X			X						X									X																		X			32
X			X						X									X																		X			33
	X	X	X						X											X																X			34
X			X						X	X								X																		X			35

	Code No.	Title	Table No.	Walking	Jumping	Running	Balancing	Climbing	Crawling	Standing	Turning	Stooping	Crouching	Kneeling	Sitting	Reaching	Lifting	Carrying	Throwing	Pushing	Pulling	Handling	Fingering
1	5-83.127	TYPEWRITER SERVICEMAN	III	X						X		X			X	X	X	X				X	X
2	5-83.211	MUSICAL-INSTRUMENT REPAIRMAN	VI	X						X		X			X	X	X			X	X	X	X
3	5-83.221	DRUM REPAIRMAN	VI							X		X			X	X	X					X	X
4	5-83.222	PIANO REPAIRMAN	VI	X						X		X			X	X				X	X	X	X
5	5-83.224	WIND-INSTRUMENT REPAIRMAN	VI							X		X			X	X	X					X	X
6	5-83.225	PIPE-ORGAN INSTALLER	VI	X						X		X			X	X	X			X	X	X	X
7	5-83.321	KNITTER MECHANIC	IV	X						X		X			X	X	X			X	X	X	X
8	5-83.322	KNITTING-MACHINE FIXER	IV	X						X		X			X	X	X			X	X	X	X
9	5-83.324	MACHINE FIXER III	IV	X						X		X			X	X	X			X	X	X	X
10	5-83.325	SEAMER-MACHINE FIXER	IV	X						X		X			X	X	X			X	X	X	X
11	5-83.326	COMB MAKER II	IV	X						X		X			X	X	X			X	X	X	X
12	5-83.411	RADIO REPAIRMAN I	IX	X						X		X			X	X	X	X		X	X	X	X
13	5-83.413	TROUBLE SHOOTER VI	IX	X						X		X				X				X	X	X	X
14	5-83.415	PUBLIC-ADDRESS SERVICEMAN	IX	X				X		X		X				X	X					X	
15	5-83.432	ELECTRIC-MOTOR ASSEMBLER AND TESTER	IX	X						X	X	X			X	X				X	X	X	X
16	5-83.445	ELECTRICIAN, RADIO I	IX	X						X	X	X			X	X	X			X	X	X	X
17	5-83.447	RADIO MECHANIC II	IX	X				X		X		X					X	X		X	X	X	X
18	5-83.452	ELECTRIC-METER TESTER	IX	X				X		X		X			X	X	X	X		X	X	X	X
19	5-83.461	GAS-METER REPAIRMAN	III	X						X		X			X	X	X			X	X	X	X
20	5-83.465	METER REPAIRMAN	III	X						X		X				X						X	X
21	5-83.471	WATER-METER REPAIRMAN	III	X						X		X				X						X	X
22	5-83.541	ARMORER	III	X						X	X	X				X	X	X	X	X	X	X	X
23	5-83.542	GUNSMITH	III	X						X		X				X	X			X	X	X	X
24	5-83.545	AIRCRAFT-ARMAMENT MECHANIC	IV	X						X		X			X	X	X			X	X	X	X
25	5-83.551	LOCKSMITH I	III	X						X		X				X	X			X	X	X	X
26	5-83.641	BREAKER REPAIRMAN	IV	X				X		X		X				X	X			X	X	X	X
27		BYPRODUCTS-PUMP PACKER	IV	X						X	X	X				X	X			X	X	X	X
28		CELLOPHANE-CASTING-MACHINE REPAIRMAN	IV	X						X		X				X	X			X	X	X	X
29		CIGAR-MAKING-MACHINE MECHANIC	IV	X						X		X			X	X	X			X	X	X	X
30		CIGARETTE-MAKING-MACHINE ADJUSTER	IV	X						X		X				X	X			X	X	X	X
31		CONSTRUCTION-EQUIPMENT MECHANIC	IV	X						X		X				X	X	X		X	X	X	X
32		CONVEYOR MAINTENANCE MAN	IV	X						X		X				X	X			X	X	X	X
33		CUTTING-MACHINE MECHANIC	IV	X						X		X				X	X			X	X	X	X
34		DONKEY DOCTOR	IV	X						X		X				X	X			X	X	X	X
35		ELECTRIC-SHOVEL-CRANE MAN	IV	X						X		X				X	X			X	X	X	X
36		ELECTRIC-WELDING-MACHINE REPAIRMAN	IV	X						X		X				X	X			X	X	X	X
37		FIELD MECHANIC	IV	X						X		X				X	X			X	X	X	X
38		FILLING-AND-CAPPING-MACHINE SET-UP MAN	IV	X						X		X				X	X			X	X	X	X
39		FITTER-UP III	IV	X						X		X				X	X			X	X	X	X

Feeling	Talking	Hearing	Seeing	Color vision	Depth perception	Working speed			Inside	Outside	Hot	Cold	Sudden temperature changes	Humid	Dry	Wet	Dusty	Dirty	Odors	Noisy	Lighting	Pressure	Vibration	Mechanical hazards	Moving objects	Cramped quarters	High places	Exposure to burns	Electrical hazards	Explosives	Radiant energy	Toxic conditions	Working with others	Working around others	Working alone	Oily	Falls	Inorganic dust	
X			X						X									X																		X			1
X	X	X	X		X				X								X	X																		X			2
X		X	X						X																													3
	X	X	X						X								X																		X			4
X		X	X						X																													5
	X	X	X						X																X	X										X		6
	X	X	X																X			X	X															7
	X	X	X		X				X								X			X				X		X									X			8
	X	X	X		X				X								X			X				X		X									X			9
	X	X	X		X				X								X			X				X		X									X			10
	X	X	X		X				X								X			X			X												X			11
	X		X						X	X								X								X			X										12
		X	X						X	X																													13
X			X		X																																		14
		X	X		X				X	X								X	X	X			X	X		X			X							X			15
		X	X																					X					X										16
X	X	X	X		X				X								X	X		X				X		X	X	X	X							X			17
	X	X	X						X								X			X																X			18
	X	X			X				X								X	X	X							X		X								X			19
X			X						X									X																					20
X			X						X									X																					21
X			X	X	X				X									X		X			X	X						X						X		X	22
			X		X				X									X						X				X								X			23
	X	X	X						X							X		X		X						X										X			24
			X						X	X								X			X			X		X			X							X			25
	X	X	X		X				X								X	X					X	X														X	26
			X						X							X			X	X				X					X							X			27
	X	X	X						X											X			X	X															28
			X		X				X								X	X						X												X			29
	X	X	X						X								X			X			X	X												X			30
X			X	X	X				X	X							X	X	X	X			X	X		X			X							X	X		31
	X	X	X						X								X			X			X	X															32
	X	X	X						X								X			X			X													X			33
	X	X	X							X							X			X			X	X												X			34
	X	X	X							X							X			X			X	X												X			35
	X	X	X						X								X		X	X			X	X				X								X			36
	X	X	X							X							X			X			X	X												X			37
	X	X	X						X								X			X			X	X												X			38
	X	X	X						X								X			X			X	X												X			39

	Code No.	Title	Table No.	Walking	Jumping	Running	Balancing	Climbing	Crawling	Standing	Turning	Stooping	Crouching	Kneeling	Sitting	Reaching	Lifting	Carrying	Throwing	Pushing	Pulling	Handling	Fingering
1	5-83.641	GAS-WELDING EQUIPMENT REPAIRMAN	IV	X						X		X				X	X			X	X	X	X
2		MACHINE-REPAIR FLOORMAN	IV	X						X		X				X	X			X	X	X	X
3		MACHINIST, LINOTYPE	IV	X						X		X				X	X			X	X	X	X
4		MAINTENANCE MAN, ENGINE	IV	X						X		X				X	X			X	X	X	X
5		MILL-SET-UP MAN	IV	X						X		X				X	X			X	X	X	X
6		PACKING-MACHINE MECHANIC	IV	X						X		X				X	X			X	X	X	X
7		PNEUMATIC-TOOL REPAIRMAN	IV	X						X		X				X	X	X		X	X	X	X
8		PNEUMATIC-TUBE REPAIRMAN	IV	X						X		X				X	X			X	X	X	X
9		POWER-SEWING-MACHINE ADJUSTER	IV	X						X		X				X	X			X	X	X	X
10		PUMP SERVICEMAN	IV	X						X		X				X	X	X		X	X	X	X
11		PUMPMAN V	IV	X						X		X				X	X			X	X	X	X
12		RECORD-PRESS ADJUSTER	IV	X						X		X				X	X			X	X	X	X
13		REGISTER REPAIRMAN	IV	X						X		X				X	X	X				X	X
14		REPAIRMAN II	IV	X				X		X		X				X	X			X	X	X	X
15		ROLL FILLER	IV	X						X		X				X	X			X	X	X	X
16		SCALE REPAIRMAN	IV	X						X		X				X	X					X	X
17		SEAMER MECHANIC	IV	X						X		X				X	X			X	X	X	X
18		SEWING-MACHINE REPAIRMAN	IV	X						X		X				X						X	X
19		SPRAY-GUN REPAIRMAN	IV	X						X		X				X						X	X
20		STEAM-HAMMER REPAIRMAN	IV	X						X		X				X	X			X	X	X	X
21		STRIPPING-MACHINE MECHANIC	IV	X						X		X				X	X			[illegible]	X	X	X
22		TIPPLE REPAIRMAN	IV	X						X		X				X	X			X	X	X	X
23		WATER-PUMP SERVICEMAN	IV	X						X	X	X				X	X			X	X	X	X
24		WRAPPING-MACHINE MECHANIC I	IV	X						X		X				X						X	X
25		WRAPPING-MACHINE MECHANIC II	IV	X						X		X				X	X			X	X	X	X
26	5-83.642	MACHINIST, MARINE GAS-ENGINE	IV	X						X	X	X				X	X					X	X
27	5-83.643	MOTORBOAT MECHANIC	IV	X						X		X				X	X			X	X	X	X
28	5-83.901	CAMERA REPAIRMAN I	III									X			X	X						X	X
29		MACHINIST, CAMERA	III	X						X		X			X	X	X			X	X	X	X
30	5-83.905	TECHNICAL-MAINTENANCE MAN	VI	X						X		X			X	X	X			X	X	X	X
31	5-83.931	DIESEL MECHANIC	IV	X						X	X	X				X	X	X		X	X	X	X
32	5-83.971	INSTRUMENT REPAIRMAN I	III	X				X		X	X	X			X	X	X			X	X	X	X
33	5-83.972	INSTRUMENT MAN IV	III	X						X	X	X				X	X	X		X	X	X	X
34	5-83.973	INSTRUMENT INSPECTOR I	III	X						X	X	X				X	X			X	X	X	X
35	5-83.975	ELECTRICAL-INSTRUMENT REPAIRMAN	IX							X	X	X			X	X	X			X	X	X	X
36	5-84.120	TOOL GRINDER I	VII							X		X				X	X			X	X	X	
37	6-33.111	BELT SANDER	VII	X						X	X	X				X	X	X		X	X	X	X
38	6-33.114	DISK SANDER II	VII	X						X		X				X		X		X	X	X	X
39	6-33.121	SPINDLE SANDER	VII	X						X		X				X	X			X	X	X	X
40	6-33.123	VARIETY SANDER	VII	X						X		X				X	X			X	X	X	X
41	6-36.061	TICKET-CHOPPER ASSEMBLER	VI							X	X	X				X	X	X				X	
42	6-36.860	LOCK MAN	VI	X						X	X	X				X	X			X	X	X	X
43	6-54.036	PRIMER INSPECTOR	X	X						X		X				X	X			X	X	X	X

Feeling	Talking	Hearing	Seeing	Color vision	Depth perception	Working speed				Inside	Outside	Hot	Cold	Sudden temperature changes	Humid	Dry	Wet	Dusty	Dirty	Odors	Noisy	Lighting	Pressure	Vibration	Mechanical hazards	Moving objects	Cramped quarters	High places	Exposure to burns	Electrical hazards	Explosives	Radiant energy	Toxic conditions	Working with others	Working around others	Working alone	Oily	Falls	Inorganic dust	
	X	X	X		X													X	X		X				X												X			1
	X	X	X							X								X	X		X				X												X			2
	X	X	X							X								X	X		X				X												X			3
	X	X	X							X								X	X		X				X												X			4
	X	X	X							X								X	X		X				X												X			5
	X	X	X							X								X	X		X				X												X			6
		X	X		X					X									X	X	X			X			X		X	X							X			7
	X	X	X							X								X	X																					8
	X	X	X							X								X			X								X								X			9
		X	X							X	X						X		X	X	X				X					X	X						X			10
			X							X							X			X	X				X					X							X			11
	X	X	X							X					X						X																X			12
			X							X							X			X																	X			13
	X	X	X		X					X								X	X					X	X			X												14
	X	X	X							X								X			X			X													X			15
			X							X																											X			16
	X	X	X							X							X				X			X													X			17
			X							X															X												X			18
			X							X																											X			19
	X	X	X							X					X						X			X													X			20
	X	X	X							X										X	X			X													X			21
	X	X	X								X							X	X		X				X														X	22
			X							X							X			X	X				X					X							X			23
			X							X															X															24
	X	X	X							X								X			X				X												X			25
			X							X											X				X		X										X			26
	X	X	X																																					27
X			X							X								X			X				X												X			28
	X	X	X		X					X											X				X															29
	X	X	X		X					X								X																			X			30
X		X	X		X														X	X	X			X	X				X				X				X			31
X			X	X						X							X		X			X			X		X			X							X			32
X			X		X					X									X						X				X								X			33
X			X		X					X									X		X						X			X							X			34
		X	X							X											X								X	X							X			35
X										X									X		X			X																36
X		X	X	X	X					X						X		X	X	X	X			X	X				X								X			37
			X							X								X						X																38
	X	X	X							X								X			X				X															39
	X	X	X							X								X							X															40
			X							X									X		X			X																41
X			X	X	X					X								X						X	X		X										X			42
X			X		X					X									X												X									43

		Job Index		Physical Demands																			
	Code No.	Title	Table No.	Walking	Jumping	Running	Balancing	Climbing	Crawling	Standing	Turning	Stooping	Crouching	Kneeling	Sitting	Reaching	Lifting	Carrying	Throwing	Pushing	Pulling	Handling	Fingering
1	6-54.037	INSPECTOR II	X	X						X		X				X	X			X	X	X	X
2	6-54.038	INSPECTOR I	X	X						X		X				X	X					X	X
3	6-65.210	GLASS GRINDER	VII	X						X		X			X	X	X			X	X	X	X
4	6-65.220	GLASS POLISHER	VII	X						X		X			X	X	X			X	X	X	X
5	6-72.012	PINION POLISHER	V	X						X		X			X	X	X			X	X	X	X
6	6-72.015	POINTER-MACHINE OPERATOR	V	X						X	X	X			X	X	X			X	X	X	X
7	6-72.031	WHEEL TRIMMER	V									X			X	X				X	X	X	X
8	6-72.098	SPRING LAYER	V	X						X		X			X	X						X	X
9	6-72.113	STEM FITTER	V	X						X		X			X	X						X	X
10	6-72.114	BENCH HAND X	V	X						X		X			X	X	X					X	X
11	6-72.115	STUD HAIRSPRINGER	V	X						X		X			X							X	X
12	6-72.121	BARREL FINISHER	V	X						X		X			X	X						X	X
13	6-72.126	JEWEL SETTER II	V	X						X					X								
14	6-72.198	DIALER	V	X						X		X			X	X						X	X
15	6-72.211	MATCHER	V							X					X	X						X	X
16	6-72.212	POISE BALANCER	V	X						X		X			X	X				X	X	X	X
17	6-72.213	TRUER	V	X						X		X			X	X						X	X
18	6-72.216	BALANCE-STAFF INSPECTOR	V	X						X		X			X							X	X
19	6-72.217	ESCAPEMENT MATCHER	V	X						X		X			X							X	X
20	6-72.221	FINAL INSPECTOR, CASING	V	X						X		X			X							X	X
21	6-72.230	HAIRSPRING TRUER	V	X						X		X			X	X						X	X
22	6-72.248	RATING-MACHINE OPERATOR	V	X						X		X			X	X						X	X
23	6-72.260	WATCH-DIAL STONER	V	X						X		X			X	X						X	X
24	6-72.296	STONER II	V	X						X		X			X	X						X	X
25	6-72.298	PIVOTER	V	X						X		X			X	X						X	X
26	6-72.312	ASSEMBLER	VI	X						X		X			X	X						X	X
27	6-72.313	BRACELET MAKER, NOVELTY	VI	X						X		X			X	X						X	X
28	6-72.314	BROOCH MAKER, NOVELTY	VI	X						X		X			X							X	X
29	6-72.331	PREPARER, MAKING DEPARTMENT	VI	X						X		X			X	X						X	X
30	6-72.465	RUBBER-OFF II	VII	X						X		X			X							X	X
31	6-72.810	JEWEL-BEARING GRINDER	VII	X						X		X			X	X							
32	6-72.814	JEWEL-BEARING BROACHER	VII	X						X		X			X							X	X
33	6-72.815	JEWEL-BEARING POLISHER	VII	X						X		X			X	X						X	X
34	6-77.015	SCRATCH BRUSHER I	VII							X										X	X	X	
35	6-77.020	BUFFER I	VII	X						X	X	X				X	X			X	X	X	X
36	6-77.060	POLISHER II	VII	X						X	X	X				X	X	X		X	X	X	X
37	6-77.710	BENCH GRINDER	VII	X						X	X	X				X	X			X	X	X	X
38	6-78.005	LATHE HAND V	VII	X						X		X			X	X						X	X
39	6-78.631	FRAME ASSEMBLER III	VI							X	X	X				X	X	X				X	
40	6-78.632	FLOOR ASSEMBLER	IV	X						X	X	X				X	X	X		X	X	X	X
41	6-78.634	ELECTRICAL ASSEMBLER II	III	X						X		X				X				X	X	X	X
42	6-78.672	GAGER I	X	X						X		X			X	X	X					X	X
43	6-78.673	SHELL INSPECTOR	X	X						X		X			X	X	X			X	X	X	X
44	6-78.675	METAL-FITTINGS INSPECTOR	X							X		X				X	X					X	X
45	6-78.676	SHEET-METAL INSPECTOR II	X	X						X		X				X	X			X	X	X	X

Feeling	Talking	Hearing	Seeing	Color vision	Depth perception	Working speed				Inside	Outside	Hot	Cold	Sudden temperature changes	Humid	Dry	Wet	Dusty	Dirty	Odors	Noisy	Lighting	Pressure	Vibration	Mechanical hazards	Moving objects	Cramped quarters	High places	Exposure to burns	Electrical hazards	Explosives	Radiant energy	Toxic conditions	Working with others	Working around others	Working alone	Oily	Falls	Inorganic dust	
X			X		X					X																					X									1
X			X							X																														2
	X	X	X							X															X														X	3
	X	X	X							X															X														X	4
	X	X	X		X					X															X												X			5
X			X							X																														6
X			X							X																														7
	X	X	X		X					X																														8
	X	X	X		X					X																														9
	X	X	X		X					X																														10
	X	X	X		X					X																														11
	X	X	X							X																														12
				X	X					X																														13
	X	X	X		X					X																														14
X			X							X															X												X			15
	X	X	X		X					X																														16
	X	X	X		X					X																														17
	X	X	X		X					X																														18
	X	X	X		X					X																														19
	X	X	X							X																														20
	X	X	X		X					X																														21
	X	X	X							X																														22
	X	X	X							X																														23
	X	X	X		X					X																														24
	X	X	X		X					X																														25
	X	X	X	X	X					X																														26
	X	X	X	X	X					X																														27
	X	X	X	X	X					X																														28
	X	X	X	X	X					X																														29
	X	X	X	X	X					X																														30
				X	X					X																														31
	X	X	X	X	X					X																														32
	X	X	X							X																														33
			X							X															X															34
X				X						X															X				X				X						X	35
X			X	X						X															X				X				X						X	36
X			X		X					X															X				X				X				X		X	37
	X	X	X		X					X																							X						X	38
			X							X	X	X	X												X															39
X			X	X	X					X														X	X					X							X			40
			X	X	X					X															X															41
	X	X	X							X																							X							42
	X	X	X							X																														43
X			X							X																														44
	X	X	X		X					X																														45

	Code No.	Title	Table No.	Walking	Jumping	Running	Balancing	Climbing	Crawling	Standing	Turning	Stooping	Crouching	Kneeling	Sitting	Reaching	Lifting	Carrying	Throwing	Pushing	Pulling	Handling	Fingering
1	6-78.677	TUBING INSPECTOR II	X	X						X		X				X	X			X	X	X	X
2	6-78.685	FINAL-PARTS INSPECTOR	X	X						X		X				X	X			X	X	X	X
3	6-82.210	CORE CHECKER	X	X						X		X				X				X	X	X	X
4	6-82.970	MOLD CHECKER I	X	X						X	X	X				X	X	X		X	X	X	X
5	6-93.077	SHEET-TIN INSPECTOR	X	X						X		X				X	X					X	X
6	6-94.111	ASSEMBLER II	VI							X					X	X						X	X
7	6-94.114	BRASS ASSEMBLER II	VI	X						X	X	X					X	X		X	X	X	X
8	6-94.411	ASSEMBLER	III	X						X	X	X			X	X	X	X		X	X	X	X
9	6-94.653	VENDING-MACHINE ASSEMBLER	IV	X						X		X				X	X			X	X	X	X
10	6-94.656	SPRAY-GUN ASSEMBLER	III	X						X	X	X				X	X	X		X	X	X	X
11	6-98.010	CHASSIS ASSEMBLER II	VI	X						X		X			X	X	X			X	X	X	X
12	6-98.030	CHECK INSPECTOR	X	X						X		X			X	X	X			X	X	X	X
13	6-98.120	INSTALLER II	VI							X		X			X	X	X					X	X
14	6-98.140	MICA-CONDENSER ASSEMBLER	VI							X		X			X	X	X					X	X
15	6-98.170	PHOTOPHONE ASSEMBLER	IX							X		X			X	X	X			X	X	X	X
16	6-98.210	RADIO REPAIRMAN II	IX	X				X		X		X			X	X	X			X	X	X	X
17	6-98.240	TRANSFORMER ASSEMBLER II	VI									X			X	X	X	X		X	X	X	X
18	6-98.310	RADIO-TRANSMITTER ASSEMBLER	IX	X						X		X			X	X	X			X	X	X	X
19	6-98.710	ASSEMBLY ADJUSTER	III	X						X		X			X	X	X			X	X	X	X
20	6-99.431	SHAFT INSPECTOR	X	X						X		X				X	X					X	X
21	7-00.222	MICROMETER INSPECTOR	X	X						X		X			X	X						X	X
22	7-00.912	CIRCULATING-PROCESS INSPECTOR	X	X						X		X			X	X						X	X
23	7-00.921	ASSEMBLER II	VI	X						X		X			X	X						X	X
24	7-00.927	COIN-MACHINE ASSEMBLER	IV	X						X		X			X	X						X	X
25	7-00.928	ASSEMBLER III	VI	X						X		X			X	X						X	X
26	7-00.938	DETAIL-ELECTRICAL ASSEMBLER	VI	X						X	X	X				X	X	X	X	X	X	X	X
27	7-00.940	INSPECTOR I	X	X						X		X			X	X						X	X
28	7-02.311	GENERAL ASSEMBLER I	VI							X		X				X				X	X	X	
29	7-02.312	MOTOR INSTALLER	IV							X	X	X				X	X			X	X	X	X
30	7-02.321	SUBASSEMBLER	VI	X						X	X	X				X	X	X		X	X	X	X
31	7-02.711	CARBURETOR INSPECTOR	X	X						X		X			X	X						X	X
32	7-03.542	DETAIL ASSEMBLER I	VI	X						X	X	X				X	X			X	X	X	X
33	7-03.552	SUBASSEMBLER II	VI	X						X	X	X				X	X			X	X	X	X
34	7-03.562	SUBASSEMBLY INSTALLER II	VI	X						X	X	X				X	X			X	X	X	X
35	7-08.020	LENS EXAMINER	X									X			X	X						X	X
36	7-08.032	LENS INSPECTOR II	X									X			X							X	X
37	7-09.327	PROJECTOR ASSEMBLER	III	X						X	X	X			X	X	X	X		X	X	X	X
38	7-09.328	CAMERA ASSEMBLER	III	X						X	X	X			X	X	X	X		X	X	X	X
39	7-10.013	INSPECTOR	X	X						X		X				X		X				X	X
40	7-53.210	ELECTRIC-CLOCK REPAIRMAN	IX	X						X		X			X	X						X	X
41	7-81.610	CARBURETOR MAN II	III	X						X		X			X	X				X	X	X	X
42	7-81.640	HEAVY REPAIRMAN	IV	X						X	X	X				X	X	X		X	X	X	X
43	7-81.910	SPEEDOMETER REPAIRMAN	III												X	X						X	X
44	7-83.325	FARM-MACHINERY-SET-UP MAN	IV	X						X		X					X	X		X	X	X	
45	7-83.326	MACHINE ADJUSTER III	IV	X						X		X				X	X			X	X	X	X

Feeling	Talking	Hearing	Seeing	Color vision	Depth perception	Working speed				Inside	Outside	Hot	Cold	Sudden temperature changes	Humid	Dry	Wet	Dusty	Dirty	Odors	Noisy	Lighting	Pressure	Vibration	Mechanical hazards	Moving objects	Cramped quarters	High places	Exposure to burns	Electrical hazards	Explosives	Radiant energy	Toxic conditions	Working with others	Working around others	Working alone	Oily	Falls	Inorganic dust	
	X	X	X		X					X																														1
	X	X	X		X					X																														2
X		X	X							X									X										X											3
X		X	X	X	X					X		X						X	X	X	X			X	X				X			X					X			4
X			X							X															X															5
X			X							X															X												X			6
			X							X								X	X		X			X																7
X			X							X									X						X															8
	X	X	X							X																														9
X			X	X	X					X								X	X		X			X	X					X							X			10
	X	X	X							X											X												X							11
	X	X	X		X					X																														12
X			X							X															X															13
			X							X															X				X				X							14
			X							X											X																			15
	X	X	X	X						X									X			X			X		X		X	X										16
X			X							X									X										X											17
	X	X	X		X					X																														18
X			X	X	X					X								X		X					X				X								X			19
			X		X					X																														20
X			X		X					X																														21
X			X		X					X																														22
X			X		X					X																														23
X			X		X					X															X												X			24
X			X		X					X															X												X			25
			X							X								X	X	X	X				X		X		X	X		X	X							26
			X		X					X																														27
			X							X									X								X										X			28
			X		X					X									X								X										X			29
X			X	X	X					X								X	X	X	X			X	X		X		X								X	X		30
X			X							X																											X			31
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			X							X									X						X								X							33
			X							X									X						X								X							34
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X			X	X	X							X						X	X					X	X												X			37
X			X	X	X					X								X	X																		X			38
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X																																								40
					X					X																											X			41
X			X	X	X					X									X	X	X				X		X						X				X			42
X			X							X																														43
			X							X															X												X			44
			X		X					X															X												X			45

Job Index *Physical Demands*

	Code No.	Title	Table No.	Walking	Jumping	Running	Balancing	Climbing	Crawling	Standing	Turning	Stooping	Crouching	Kneeling	Sitting	Reaching	Lifting	Carrying	Throwing	Pushing	Pulling	Handling	Fingering
1	7-83.415	RADIO INSTALLER, AUTOMOBILE	IX	X						X		X			X	X	X			X	X	X	X
2	7-83.910	RIGGING-LOFT REPAIRMAN	IV	X						X		X				X	X					X	
3	7-84.110	TOOL GRINDER II	VII	X						X		X				X	X					X	
4	7-84.910	GRINDING-WHEEL DRESSER	VII	X						X		X				X	X					X	
5																							
6																							
7																							
8																							
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Feeling	Talking	Hearing	Seeing	Color vision	Depth perception	Working speed			Inside	Outside	Hot	Cold	Sudden temperature changes	Humid	Dry	Wet	Dusty	Dirty	Odors	Noisy	Lighting	Pressure	Vibration	Mechanical hazards	Moving objects	Cramped quarters	High places	Exposure to burns	Electrical hazards	Explosives	Radiant energy	Toxic conditions	Working with others	Working around others	Working alone	Oily	Falls	Inorganic dust	
		X	X						X															X		X													1
X									X																														2
X		X	X						X									X	X				X	X												X			3
X		X	X						X									X	X				X	X												X			4
																																							5
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War Manpower Commission B. Thirlby
United States Employment Service

INDUSTRIAL MANNING TABLE

for

AIRFRAME INDUSTRY

(For use by staff members only. Not to be confused with plant manning tables which are prepared by individual plants upon proper authorization of the War Manpower Commission)

Employment Service Division
Occupational Analysis Section
October 1942

FOREWORD

The information in these Manning Tables was gathered by trained analysts of the United States Employment Service, through personal observation of the jobs as they existed in the manufacturing plants. Although the bulk of the information was gathered during the year between August, 1941 and July, 1942, it is recognized that many jobs are repeatedly being changed, and revision will be necessary. However, it is also felt that although processes and production methods are changing, the occupations themselves will remain essentially the same qualitatively; e.g., a RIVETER will continue to rivet, although he may not need to be very versatile; and a FINAL ASSEMBLER will continue to assemble, although he may no longer be required to read blueprints.

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INTRODUCTION

1. Explanation of the Manning Tables.

The purpose of the Manning Tables is to indicate the kinds and numbers of occupations found in the airplane industry, with notes on the length of time required for an untrained but potentially suitable worker to reach normal production, and the suitability of these occupations for the employment of women.

To simplify the tables, the industry has been divided into 17 sections, roughly corresponding to typical departments as found in the industry, but based more on production process than on an artificial departmental breakdown. Percent ranges showing the ratio of the number of employees in each department to the total number employed by the plant are given for each section.

Within each section, the list of main job titles show the usual occupations together with the percent range to the section as a whole (ratio of the number employed in the occupation to the number employed in the section) as found in most of the plants studied.

Indented under most of the main job titles are titles which reflect how these jobs are broken down into, substituted by, or supplemented by, other occupations, as found in the plants studied. In all cases, the workers in these subsidiary occupations either assist, perform tasks of, or perform similar or substitute work for, the main job indicated. In general, the large manufacturing plants break down the work into finer tasks than the smaller plants; but, as the smaller plants expand, or the larger plants refine their production techniques, the breakdowns of the jobs indicate the general pattern to be followed.

Most of the occupations herein are included in the structure of the Dictionary of Occupational Titles and its Supplement (obtainable from the Superintendent of Documents, Washington, D.C., or available for use in all local operating offices of the United States Employment Service). The remainder, marked "tent." (tentative), are the most recently prepared definitions not yet thoroughly verified or published. However, definitions for all occupations included in these Manning Tables appear in the Appendix.

Also in the Appendix is an alphabetical list of all occupations, showing the section or sections of the Manning Tables in which the occupation occurs, the training time for each, and its suitability for the employment of women.

It is intended that the next edition of these Manning Tables will include an alphabetical list of alternative titles for all the occupations listed, based on further information now being gathered. For the present, however, these alternative titles will be found within the definitions of the occupations presently included.

2. Use of the Manning Table

In applying these Manning Tables, it is of fundamental importance to know what is the construction of the airplanes involved--that is, the material of which the main structural sections are built. (The size or function of the airplane is not necessarily significant.) For example, all-metal airplanes require the same occupations, whether they are trainers, pursuit ships, 4-engine bombers, transports or subassemblies for these airplanes, whereas the occupations involved in the manufacture of wood transports are entirely different from metal transports, or occupations in the manufacture of monocoque fuselages are different from those in the manufacture of tubular-steel fuselages.

Therefore, the applicable sections of these Manning Tables must be chosen according to the type of construction.

Some typical examples of applicable sections follow:

All-Metal Airplanes (Monocoque Fuselage)	Wood-Wing, Fabric-Covered Tubular Fuselage (as PT-19 Trainer)	Transport Gliders (Army, Wood-Wing, Fabric Covered Fuse.)	All Wood Gliders	Wood Cargo Transports
Section	Section	Section	Section	Section
1	1	1 (Ex. Part 3,4)	1 (Ex. Part 3,4)	1 (Ex. Part 3,4)
2	2	2 (Small)	5 (Small)	2 (Small)
3	3	5 (Small)	7	5
4	4	7	10	7
5	5 (Small)	8	12 Part 2	8 (Small)
6	6	10	13	10
7	7	11	14	11 (?)
8	8	12 Part 2	15	12
9	10	13	16	13
12	11	14	17	14
13	12 (Ex. Part 1)	15		15
14	13	16		16
15	14	17		17
16	15			
17	16			
	17			

Subcontractors generally follow the same patterns, except they do not include Sections 12 and 15, Final Assembly and Engineering.

PROCESS SECTIONS

TOOLING SECTION 1

Nearly all the departments in a plant are dependent upon the tooling shops because tools, consisting of jigs, fixtures, templates, and dies are needed for accurate and rapid production.

The tooling-up process is a continual operation, even after the production job begins, because of design changes and the necessity for speeding-up production processes. However, the size of this department varies with the stage in tooling-up, and/or if the plant is building tools for subcontractors, or receiving them from a parent plant.

Lofting and Template Making

The lofting section receives completed preliminary blueprint drawings from the Engineering Department.

The streamlining or "fairing" of the contours of the airplane structural parts is accomplished by preparing full-scale or reduced-scale drawings on loft boards of sheet metal or plywood. From the faired drawings, called loft boards, dummy wooden models are made. These models provide a further check on the developed design of the airplane.

After the mock-up structures are approved, master patterns, called templates, are prepared. From the dimensions shown on the loft boards, sheet metal sections, representing actual airplane sections are laid out.

Copies are then made of the master templates to be used as production templates or shop guides.

Jig Building

Jigs and fixtures are constructed from duplicate sets of the preliminary engineering blueprints. The jigs are carefully constructed and aligned so that the part built within them will be highly accurate. Assembly jigs are used in the construction of such airplane parts as tail assembly, ailerons, fuselage, and engine mounts.

Fixtures are made to hold the parts while they are being cut, shaped or assembled.

Patternmaking

Wood patterns are prepared here in accordance with blueprint specifications. These patterns may correspond to individual sections of the airplane or to major airplane components.

Plaster patterns may also be cast here. These are finished to exact dimensions, painted and shellacked and marked with identifying numbers and letters.

Tooling Foundry

The finished plaster or wood patterns are routed to the foundry and used in the preparation of open sand molds. Molten zinc or lead alloy, such as Kirksite, is poured into these molds to form dies for shaping sheet metal on Hydro-Presses or to form female die section of Drop Hammer dies, these to be used to mold the male section. These dies are cleaned, finished and polished by workers in the foundry.

Tool, Gage and Die-Making and Repair

Here tool and die workers make all the necessary tools for forming equipment, such as machine tools, punch presses, offset machines, small dies and large pre-cast metal dies to be used throughout the plant and in fabricating parts.

These dies are laid out on metal, cut, machined, and finished. Large dies are sculptured from blocks of cast metal.

Cutting tools for production and toolroom machines are reworked and sharpened in this shop.

Machine Shop

Some plants operate a job machine shop exclusively for the tooling department. The jobs, however, are basically the same as in the production machine shop, except that there are fewer workers, and in the more skilled occupations.

TOOLING - SECTION I

(3% to 8% of All Workers in a Complete Aircraft Plant)

Occupations Occurring in Most Plants

1. Lofting and Template Making

Code	Title	% Range
5-17.255	GROUP LEADER TEMPLATE MAKER IV, 5-17.255	1-2
5-17.245	LOFTSMAN III PHOTO-TEMPLATE MAKER (tent.)	1-3
5-17.255	TEMPLATE MAKER IV MATERIAL-RELEASE MAN (tent.) TEMPLATE FILER, 6-94.230 TEMPLATE LAY-OUT MAN, 4-80.020	10-25

2. Jigs and Fixtures

Code	Title	% Range
6-78.610	DO-ALL SAW OPERATOR BAND-SAWING-MACHINE OPERATOR, 6-78.611 CIRCULAR-SAWING-MACHINE OPERATOR, 8-78.10 GRAVITY-FEED-HACKSAWING MACHINE OPERATOR, 8-78.10 HACKSAWING-MACHINE OPERATOR, 8-78.10 HYDRAULIC-FEED-HACKSAWING-MACHINE OPERATOR POSITIVE-FEED-HACKSAWING-MACHINE OPERATOR SPRING-TENSION-FEED-HACKSAWING MACHINE OPERATOR	1-2
5-17.060	FORM BUILDER I FIXTURE MAKER, 4-76.210 FORM-BUILDER HELPER, 8-78.10 JIG MAKER, 4-76.210 SHAPER-FORM MAKER WOOD-TOOL MAKER WOOD-TOOL MAKER APPRENTICE (tent.) WOOD-TOOL MAKER, HELPER, 9-03.01	35-45
4-78.043	JIG-BORING MACHINE OPERATOR SWISS-JIG-BORING-MACHINE OPERATOR	0.5-1
4-85.030	WELDER, ACETYLENE WELDER-HELPER, ACETYLENE	0.5-1
4-85.020	WELDER, ARC WELDER HELPER, ARC	1-3
4-85.040	WELDER, COMBINATION WELDER HELPER, COMBINATION	1-2

3. **Patternmaking**

5-17.248	GROUP LEADER III PATTERNMAKER, PLASTER, 5-17.248	1-2
5-17.240	MOCK-UP ASSEMBLER	0.5-1
5-17.248	PATTERNMAKER XI CLAY MODELER PATTERNMAKER, PLASTER II PLASTER-PATTERN CASTER, 5-17.250	2-5
5-17.020	PATTERNMAKER, WOOD PATTERNMAKER APPRENTICE, WOOD, 7-99.833	1-4

4. **Foundry**

4-76.030	DIE CLEANER AND POLISHER DIE FINISHER, 4-76.010 DIE FINISHER, HELPER, 9-03.01	1-2
4-81.030	MOLDER, FLOOR LEAD MOLDER, 6-81.090 LEAD-PLATE MAN (tent.) MOLDER APPRENTICE, 7-97.050 MOLDER, BENCH I, 4-81.010 MOLDER HELPER III, 6-82.950	1-3

5. **Tool and Gage Making and Repair**

4-76.010	DIE MAKER DIE-MAKER APPRENTICE, 7-94.110 DIE-TRY-OUT MAN EDGER MAN I	1-3
4-76.210	GAGE MAKER GAGE-GRINDER, 5-84.110	0-1
4-76.040	TOOL-AND-DIE MAKER TOOL-AND-DIE MAKER APPRENTICE, 7-94.112	3-5
4-76.210	TOOL MAKER PNEUMATIC TOOL REPAIRMAN, 5-83.641 TOOL DRESSER I, 5-84.010 TOOL GRINDER I, 5-84.120 TOOL GRINDER HELPER, 9-65.43 TOOL GRINDER OPERATOR, 5-84.110 DRILL SHARPENER II TOOL MAKER, BENCH TOOL REPAIRMAN TOOL STRAIGHTENER TOOL TROUBLEMAN	1-3

Occupations Occurring in Some Plants

4-86.010	ANGLESMITH
4-86.010	BLACKSMITH II
7.010	BLACKSMITH APPRENTICE
8-93.71	BLACKSMITH HELPER
1-25.13	CALCULATING-MACHINE OPERATOR
6-78.512	DISK-GRINDER OPERATOR
4-75.140	FORM-BLOCK LAY-OUT MAN
4-76.910	KELLER-MACHINE OPERATOR
4-75.140	LAY-OUT MAN
0-44.71	MODEL MAKER IV
5-17.020	MODEL MAKER V
6-85.240	PANTOGRAPH OPERATOR II
5-17.030	PATTERN-LAY-OUT MAN
6-88.664	POWER-SHEAR OPERATOR I

MACHINE SHOP SECTION 2

This department is a typical production machine shop, machining steel and aluminum parts to close tolerances for use on all parts of the airplane.

Parts to be machined are used in small or large structural parts, small fittings and attachments or component parts of mechanical subassemblies, such as pulley baskets, bell cranks, and various control units. Also manufactured here is heavy tubing used for parts such as landing gears, control rods, bushings, and accurate fittings.

Materials used include aluminum alloys, iron, steel and steel alloys, copper and copper alloys.

Equipment used includes Turret Lathes, Milling Machines, Engine Lathes, and miscellaneous machines such as Bench Lathes, Grinders, and Drill Presses.

MACHINE SHOP - SECTION 2

(4% to 6% of All Workers in a Complete Aircraft Plant)

Occupations Occurring in Most Plants

Code	Title	% Range
4-78.041	BORING-MILL OPERATOR	0.5-1
	HORIZONTAL-BORING-MILL OPERATOR	
	HORIZONTAL-BORING-AND-MILLING MACHINE OPERATOR, 4-78.042	
	VERTICAL-BORING-MILL OPERATOR	
6-77.510	BURRER, HAND	3-8
4-78.011	ENGINE-LATHE OPERATOR I	9-15
	ENGINE-LATHE OPERATOR II, 6-78.011	
	FINISHING-LATHE OPERATOR	
	GISHOLT-LATHE OPERATOR, 6-78.163	
	PRECISION-LATHE OPERATOR	
	SCREW-CUTTING-LATHE OPERATOR	
6-78.632	BENCH ASSEMBLER	5-15
	FLOOR ASSEMBLER III	
(tent.)	FIBRE WORKER	0-1
5-92.768	FOREMAN	4-9
	GROUP LEADER III	
	BENCH ASSEMBLER III, 6-78.632	
	ENGINE-LATHE OPERATOR I, 4-78.011	
	MACHINIST, BENCH, 4-75.120	
	MILLING-MACHINE OPERATOR II, 4-78.031	
	TURRET-LATHE OPERATOR, 4-78.021	
Gen. Term	GRINDING-MACHINE OPERATOR IV	0.5-1
	BAR-TOOL-GRINDING MACHINE OPERATOR, 5-84.110	
	BARBER-COLEMAN, OPERATOR, 5-84.110	
	BENCH GRINDER, 6-77.710	
	CENTERLESS GRINDER OPERATOR, 6-78.511	
	CYLINDRICAL-GRINDER OPERATOR I, 4-78.511	
	CYLINDRICAL-GRINDER OPERATOR II, 6-78.521	
	DISK-GRINDER OPERATOR, 6-78.512	
	EXTERNAL-GRINDER OPERATOR, 6-78.513	
	EXTERNAL-GRINDER, TOOL, 4-78.511	
	EXTERNAL-CYLINDRICAL-GRINDER OPERATOR	
	GRINDER, 6-77.040	
	RIVETING-TOOL GRINDER	
	ROTARY-SURFACE-GRINDER-OPERATOR, 6-78.515	
	SURFACE-GRINDER OPERATOR I, 4-78.513	

	SURFACE-GRINDER OPERATOR II, 6-78.522	
	SURFACE-GRINDER-OPERATOR HELPER, 8-78.10	
	TOOL GRINDER OPERATOR, 5-84.110	
	UNIVERSAL-GRINDER OPERATOR, 4-78.511	
4-75.160	JOB SETTER II	0.5-1
	SCREW-MACHINE-SET-UP MAN, AUTOMATIC	
	TURRET-LATHE SET-UP MAN	
	PUNCH-PRESS SET-UP MAN, 4-76.120	
9-65.64	LABORER	0-2
	BRIQUETTE MACHINE OPERATOR	
	CLEANER	
	OIL EXTRACTOR	
	SCRAP WHEELER II	
8-78.10	LABORER, PROCESS	
	RIDDLER	
4-75.010	MACHINIST II	3-5
	MACHINIST, FLOOR	
	MACHINIST, HELPER, 8-78.10	
7-94.100	MACHINIST APPRENTICE	0-1
	AIRCRAFT-MACHINE-SHOP-APPRENTICE (tent.)	
4-78.120	MACHINIST, BENCH	7-20
	BENCH REPAIRMAN	
4-78.031	MILLING-MACHINE OPERATOR II	13-18
	FIXED-BED-MILLING-MACHINE OPERATOR	
	FOOT-MILLING-MACHINE OPERATOR	
	HORIZONTAL-MILLING-MACHINE OPERATOR	
	HY-CYCLE-MILL OPERATOR	
	LUG-MILLING-MACHINE OPERATOR	
	MILLING-MACHINE OPERATOR, AUTOMATIC, 6-78.031	
	MILLING-MACHINE OPERATOR, HAND	
	MILLING-MACHINE OPERATOR, PORTABLE	
	PLAIN-MILLING-MACHINE OPERATOR	
	PLANER-TYPE-MILLING MACHINE OPERATOR	
	SPAR-CAP-MILL OPERATOR	
	THREAD-MILLING-MACHINE OPERATOR, 6-78.143	
	VERTICAL-MILLING-MACHINE OPERATOR	
6-78.081	MULTIPLE-SPINDLE-DRILL-PRESS OPERATOR	5-10
	DRILL OPERATOR, AUTOMATIC	
	HYDRAULIC-FEED-DRILL OPERATOR	
	REAMER, MACHINE	
	SENSITIVE-FEED DRILL-PRESS OPERATOR	

4-78.071	PLANER OPERATOR II HYDRAULIC-PLANER OPERATOR OPEN-SIDE-PLANER OPERATOR	0.5-1
6-88.622	PUNCH PRESS OPERATOR	0-1
6-78.082	RADIAL-DRILL-PRESS OPERATOR	0.5-1
(tent.)	SAW OPERATOR BAND-SAWING-MACHINE OPERATOR, 6-78.611 FRICTION-SAWING-MACHINE OPERATOR, 6-78.613 HACKSAWING-MACHINE OPERATOR, 9-03.01 TRIM-SAW OPERATOR, 6-78.612	0.5-2
6-78.144	SCREW-MACHINE OPERATOR, SEMI-AUTOMATIC SCREW-MACHINE OPERATOR. AUTOMATIC, 6-78.145	0-2
4-78.061	SHAPER OPERATOR I DRAW-SHAPER OPERATOR HORIZONTAL-SHAPER OPERATOR SHAPER-OPERATOR HELPER I, 8-78.10 VERTICAL-SHAPER OPERATOR	0.5-2
1-05.01	SHOP CLERK	1-2
6-78.083	SINGLE-SPINDLE-DRILL-PRESS OPERATOR BROKEN-ARM-DRILL-PRESS OPERATOR COLBURN-DRILL-PRESS OPERATOR COUNTERSINK OPERATOR DRILLING-AND-TAPPING MACHINE OPERATOR HIGH-SPEED-FRICTION-DRILL-PRESS OPERATOR HORIZONTAL-DRILL-PRESS OPERATOR UPRIGHT-DRILL-PRESS OPERATOR VERTICAL-DRILL-PRESS OPERATOR	5-8
4-76.210	TOOLMAKER	0-1
4-78.021	TURRET-LATHE OPERATOR AIR-CHUCK OPERATOR, 6-78.021 CHUCKING-MACHINE OPERATOR, 6-78.021 GISHOLT-LATHE OPERATOR, 6-78.163 JONES-AND-LAMSON-LATHE OPERATOR LATHE OPERATOR, AUTOMATIC I, 6-78.164 LIBBY-LATHE OPERATOR SCREW-MACHINE OPERATOR TURRET-LATHE OPERATOR, AUTOMATIC, 6-78.021 UNIVERSAL-TURRET-LATHE OPERATOR	8-15

Occupations Occurring in Some Plants

6-88.611	ARBOR PRESS OPERATOR
(tent.)	BACK-FACING MACHINE OPERATOR
6-78.140	BOLT-THREADING MACHINE OPERATOR
6-78.041	BORING-MACHINE OPERATOR, AUTOMATIC
4-78.120	BROACHER, HAND
6-78.051	BROACHING MACHINE OPERATOR HORIZONTAL-BROACHING-MACHINE OPERATOR INTERNAL-BROACHING-MACHINE OPERATOR
6-78.152	CENTERING-MACHINE OPERATOR
6-78.511	CENTERLESS-GRINDER OPERATOR CENTERLESS-GRINDING MACHINE OPERATOR, AUTOMATIC,8-78.10
6-88.627	FORMING-PRESS OPERATOR
4-76.910	KELLER-MACHINE OPERATOR
6-78.413	LAPPING-MACHINE OPERATOR
4-78.111	PROFILING-MACHINE OPERATOR I PROFILING-MACHINE OPERATOR II, 6-78.111
6-93.195	RIVET-MACHINE OPERATOR
(tent.)	STICKER OPERATOR
6-78.671	TESTER I TESTER II

SHEET METAL-SECTION 3

1. Sheet Metal Bench Forming

This section of the Sheet Metal Department hand-forms aircraft sheet metal, mostly dural but some sheet steel, into shapes which cannot conveniently be formed on machines because of the contour or because only a few shapes are required. Some of the parts fabricated include fairing, cowling, extrusions, gas tanks and ducts.

Most of the work is performed at a bench with hand tools such as mallets, dollies, forming blocks, snips, punches, and measuring devices. However, some small hand-operated machines such as rollers, shrinkers and hand-brakes are used. Very little assembly work is performed.

The occupations in this section are usually classified into A, B, and Beginner grades (sometimes first class, second class, and beginner) for payroll purposes, depending on the experience and the ability of each individual worker. The training grades assigned to these workers in the accompanying chart indicate at least a second class worker. It is assumed that all beginners or learners have less than six months' experience and are not yet full qualified workers.

2. Sheet Metal Machines

This section includes all the sheet metal fabricating machines, such as hydraulic presses, forming presses, power brakes, drop hammers, power hammers, power shears, and routers. Parts are fabricated for all sections of the airplane such as ribs, cowls, floor boards, tubing and the skin.

In some plants the drop hammers are included in an individual department depending on the number of drop hammers involved.

The workers in this department may also be classified into A, B or Beginner grades; Beginners, therefore, should not be considered fully qualified workers.

SHEET METAL - SECTION 3

(5% to 7% of All Workers in a Complete Aircraft Plant)

Occupations Occurring in Most Plants

Code	Title	% Range
1. Sheet Metal Bench Forming		
6-77.510	BURRER, HAND	0-8
5-92.411	FOREMAN GROUP LEADER III SHEET-METAL WORKER, AIRCRAFT I, 4-80.050	1-2
4-80.050	SHEET-METAL FORMER	15-20
4-80.020	SHEET-METAL LAYOUT MAN I SHEET-METAL LAYOUT MAN II, 6-94.222	2-4
4-80.050	SHEET-METAL WORKER, AIRCRAFT I AIRCRAFT-SHEET-METAL-MECHANIC APPRENTICE, (tent.) COWLMAN I DURAL MECHANIC EXTRUSION FORMER FAIRING MAN II FINISHER, HAND (XII) SHEET-METAL WORKER HELPER, AIRCRAFT, 6-94.231 TRAILING-EDGE MAN	20-25
9-03.01	SHEET-METAL WORKER HELPER ANNEALER, TORCH BURNISHER, HAND, 6-77.320 ENGRAVING-MACHINE OPERATOR, 4-73.510 ETCHER FORMED-WORK LAY-OUT MAN HAND-DRILLER-AND-TRIMMER LABORER, PROCESS MATERIAL WEIGHER, 1-45.01 MATERIAL WRAPPER, 9-65.43 PARTS NUMBERER ROUTER MAN, HAND, (tent.) SHEET METAL BUNDLER, 7-88.730	0-10
1-05.01	SHOP CLERK	1-2
2. Sheet Metal Machines		
6-94.221	BUMPER OPERATOR I BUMPER IV, 4-80.010 BUMPER OPERATOR HELPER, 9-03.01 BURNISHER AND BUMPER, 6-77.340 CROWNING-HAMMER OPERATOR	1-2

4-76.120	DIE SETTER I PUNCH-PRESS SET-UP MAN	0-1
4-86.170	DROP-HAMMER OPERATOR IV DROP-HAMMER OPERATOR HELPER, 9-03.01 SHEET-METAL OILER, 9-03.01	3-5
5-92.411	FOREMAN GROUP LEADER III DROP-HAMMER OPERATOR, HEAD, 4-86.170 HYDRO-PRESS OPERATOR, 4-88.632 POWER-BRAKE OPERATOR III, 6-94.207 POWER-SHEAR OPERATOR, 6-88.664 PUNCH-PRESS OPERATOR, 6-88.622 RADIAL-ROUTER OPERATOR, 6-94.226 SHEARMAN, HEAD, 5-92.411	3-5
6-94.215	FORMING-MACHINE OPERATOR IV BUFFALO-ROLLS OPERATOR FARNHAM-ROLLER OPERATOR POWER-ROLLS-OPERATOR HELPER	2-4
4-88.627	FORMING-PRESS OPERATOR II FORMING-PRESS OPERATOR, AUTOMATIC FORMING-PRESS OPERATOR HELPER, 9-03.01 OFFSET-PRESS OPERATOR, (tent.) STRETCH-FORMER OPERATOR, (tent.) STRETCH-FORMER OPERATOR HELPER, (tent.)	1-3
4-88.632	HYDRO-PRESS OPERATOR HYDRO-PRESS-CHECKER, 6-88.628 HYDRO-PRESS OPERATOR HELPER, 9-03.01 HYDRO-PRESS-TABLE LOADER, 9-03.01	3-5
6-94.207	POWER-BRAKE OPERATOR III BRAKE OPERATOR, MACHINE II BRAKE OPERATOR, HAND, 6-94.206 BRAKE OPERATOR HELPER, MACHINE, 9-03.01	3-5
6-88.664	POWER-SHEAR OPERATOR I LAY-OUT MAN, 4-80.022 MATERIAL CUTTER, (tent.) PARTS TRIMMER, (tent.) POWER-SHEAR OPERATOR HELPER, 9-03.01 SHEAR OPERATOR, HAND, 9-03.01 SHEET-METAL-CULLS PACKER, 9-65.43 SQUARE-SHEAR OPERATOR	4-6
(tent.)	PRESS OPERATOR FOOT-PRESS OPERATOR, 9-03.01 JOGGLE-PRESS OPERATOR, 4-88.624 KICK-PRESS OPERATOR II, 6-88.627 KICK-PRESS OPERATOR IV, 6-88.625 STRETCHING-PRESS OPERATOR, 6-88.627 TOGGLE-PRESS OPERATOR II, 6-88.630	1-3

6-78.112	PROFILING-MACHINE OPERATOR III	1-2
	PROFILING-MACHINE OPERATOR HELPER, 9-03.01	
6-88.622	PUNCH-PRESS OPERATOR I	5-8
	PUNCH-PRESS OPERATOR, AUTOMATIC, 6-88.624	
	PUNCH-PRESS OPERATOR, HAND, 6-88.625	
	PUNCH-PRESS OPERATOR HELPER, 9-03.01	
6-78.082	RADIAL-DRILL OPERATOR III	1-3
6-94.226	RADIAL-ROUTER OPERATOR	1-2
	PIN-ROUTER OPERATOR, 6-94.227	
	RADIAL-ROUTER OPERATOR HELPER, 9-03.01	
	RADIAL-DRILL-AND-ROUTER TABLE LOADER, 6-94.222	
6-94.227	ROUTER OPERATOR III	0-1
	ROUTER OPERATOR, PORTABLE, 6-94.235	
(tent.)	SAW OPERATOR	2-5
	BAND-SAWING-MACHINE OPERATOR, 6-78.611	
	CIRCULAR-SAWING-MACHINE OPERATOR, 6-78.612	
	CUT-OFF-SAW SET-UP MAN, (tent.)	
	DO-ALL-SAW OPERATOR, 6-78.610	
	HACKSAWING-MACHINE OPERATOR, 9-03.01	
	JIGSAW OPERATOR II, 6-94.232	
	JIGSAW OPERATOR IV, 6-78.617	
	TABLE-SAW OPERATOR, (tent.)	
	UNISAW OPERATOR, (tent.)	
(tent.)	SHEAR OPERATOR	1-2
	CIRCLE-SHEAR OPERATOR II, 6-94.233	
	LIBERT-SHEAR OPERATOR, 6-88.668	
	ROTARY-SHEAR OPERATOR II, 6-94.204	
	UNISHEAR OPERATOR, PORTABLE, (tent.)	
6-94.202	SHEET-METAL-FABRICATING-MACHINE OPERATOR	1-3
	ANGLE BENDER I, 4-80.050	
	BENDING-MACHINE OPERATOR, PNEUMATIC, 6-94.240	
	BENDING-MACHINE-OPERATOR HELPER, PNEUMATIC	
	CROWNING-MACHINE OPERATOR, 6-94.234	
	DRAW-BENCH OPERATOR, 4-88.314	
	DRAW-BENCH OPERATOR HELPER, 9-03.01	
	DRAW-BENCH-STRAIGHTENER-OPERATOR, (tent.)	
	ERCO-FORMER OPERATOR, (tent.)	
	FLANGER IV, 6-94.228	
	FLANGER HELPER, 9-03.01	
	FLANGING-MACHINE OPERATOR IV, 6-94.224	
	FOLDING-MACHINE OPERATOR IV, 6-94.208	
	NIBBLING-MACHINE OPERATOR, 6-94.270	
	POWER-ROLL OPERATOR, 9-03.01	
	ROUTER OPERATOR	
	SHEET-METAL-ROLLING-MACHINE OPERATOR, 9-03.01	
	SHRINKING--MACHINE OPERATOR II, 6-94.223	
	SPINNER IV, 4-94.201	
	STRAIGHTENER,HAND, 6-88.613	

	STAGING-MACHINE OPERATOR II, 6-86.120	
6-78.083	SINGLE-SPINDLE-DRILL-PRESS OPERATOR	0-3
6-95.053	TUBE-BENDING-MACHINE OPERATOR (See also SECTION 5, CONDUIT AND CABLE)	0-1

SHEET METAL DETAIL ASSEMBLY

SECTION 4

This section includes the fabrication of literally hundreds of sheet metal subassemblies for later installation in the airplane.

Much of the work is still performed by hand, although modern practice is speeding up the work by the use of spot welding equipment and riveting machine.

Specialization of individual workers on one product or one type of work is being carried out as production allows.

SHEET METAL DETAIL ASSEMBLY - SECTION 4

(3% to 6% of All Workers in a Complete Aircraft Plant)

Occupations Occurring in Most Plants

Code	Title	% Range
6-95.080	BUCKER-UP IV	0-2
7-03.542	DETAIL ASSEMBLER I ENDS ASSEMBLER RIB ASSEMBLER RIB FRAME BUILDER SHROUDMAN II SKELETON ASSEMBLER II TANK-FITTINGS ASSEMBLER	20-35
6-95.084	DIMPLER DIMPLING-MACHINE OPERATOR, 6-88.622	0-2
(tent.)	RIVET SORTER RIVET SERVICE MAN, (tent.)	0-1
6-95.080	RIVETER, AIRCRAFT RIVET SPINNER, 6-95.075 RIVET SQUEEZER, (tent.) RIVETER HAND IV, 6-95.081 RIVETER HELPER, AIRCRAFT, 9-03.01 RIVETER, PNEUMATIC III, 6-95.082 RIVETER, RIB, 6-95.081 RIVETER, SHELL, 6-95.081	1-5
6-95.074	RIVETING-MACHINE OPERATOR IV BAFFLE ASSEMBLER ERCO-MACHINE OPERATOR RIVETER, ANGLE RIVETING-MACHINE-OPERATOR HELPER, 9-03.01	1-5
4-80.060	SHEET-METAL WORKER, AIRCRAFT II AIRCRAFT-SUBASSEMBLER APPRENTICE (tent.) BEAM MAN III CHANNEL-AND-BULKHEAD MAN COCKPIT-COWL ASSEMBLER COCKPIT-COWL SKIN MAN COWLMAN II FIRE-WALL ASSEMBLER FLOOR-BOARD ASSEMBLER II GAS--TANK SUBASSEMBLER SHEET-METAL FORMER SHEET-METAL WORKER, AIRCRAFT I, 4-80.050 SHEET-METAL WORKER HELPER, AIRCRAFT	20-35

7-03.552 **SUBASSEMBLER II**
- CLEAN-UP-MAN VII, 7-03.552
- CONTROLS ASSEMBLY MAN, (tent.)
- CORRUGATION ASSEMBLER, (tent.)
- SMALL-PARTS ASSEMBLER III
  - BULKHEAD MAN
  - DOOR ASSEMBLY MAN, (tent.)
  - DOORFRAME ASSEMBLER II
  - HAND DRILLER AND TRIMMER, 9-03.01
  - REAR-DECK ASSEMBLER
  - SHELL FITTER
  - SPAR BUILDER I
  - TANK BUILDER II
    - RUBBER-TANK-LINING INSTALLER
    - TANK STRAIGHTENER, 7-03.544

5-03.554 **SUBASSEMBLER III** 10-20
- FITTING MAN
  - AIR-MAZE ASSEMBLER
  - COWLING-INSTALLATION ASSEMBLER
  - ENGINE-MOUNT-AND-COWLING ASSEMBLER
  - FITTING-MAN HELPER
  - SHEET-METAL ASSEMBLER II, (tent.)
- SKELETON ASSEMBLER I
  - BENCH ASSEMBLYMAN
  - BENCH ASSEMBLYMAN HELPER, 9-03.01
  - SKELETON ASSEMBLER HELPER, 9-03.01
- SMALL-PARTS ASSEMBLER IV

6-85.099 **WELDER, ALUMINUM** 1-3

6-85.060 **WELDER, SPOT** 1-3

Occupations Occurring in Some Plants:

7-77.050 **CANOPY ASSEMBLY**

9-03.01 **CAPPER AND BANDER**

9-03.01 **ETCHER II**

9-03.01 **PARTS NUMBERER**
- NUMBER STAMPER

(tent.) **REAMER IV**
- REAMER HELPER, 9-03.01

9-03.01 **SCREW DRIVER**

9-03.01 **TANK WASHER IV**

MISCELLANEOUS DETAIL ASSEMBLY

SECTION 5

This section includes all detail assembly other than sheet metal, such as electrical assembly; cable and tubing fabrication; welded assemblies as engine mounts, manifolds, and landing gears, plexiglas work; and miscellaneous machined assemblies as landing gears and moving units.

MISCELLANEOUS DETAIL ASSEMBLY - SECTION 5

(OTHER THAN SHEET METAL)

(2% to 4% of All Workers in a Complete Aircraft Plant)

Occupations Occurring in Most Plants

Code	Title	% Range
Tubing, Conduit and Cable (0.5% to 2% of All Workers)		
6-77.510	BURRER, HAND	
7-89.053	CABLE SWAGER	
	CABLE-SWAGER HELPER	
GENERAL	GROUP LEADER III	
	TUBING BENDER II, 6-95.053	
(tent.)	TUBE ASSEMBLER	
	TINNER, (tent.)	
6-95.053	TUBING BENDER II	
	FILER VII, (tent.)	
	REJECTED-PARTS CHECKER AND TEMPLATE MAKER, (tent.)	
	ROLLING-MACHINE OPERATOR IV, (tent.)	
	SOFT-TUBING BENDER, (tent.)	
	STEEL-TUBING BENDER, (tent.)	
	STEEL-TUBING HELPER, 9-03.01	
	TUBE ANNEALER, (tent.)	
	TUBE BENDER, HAND, (tent.)	
	TUBE-BENDER HELPER, 9-03.01	
	TUBE-BENDING-MACHINE OPERATOR	
	TUBE-BENDING-MACHINE OPERATOR HELPER, 9-03.01	
	TUBE-CUTTER V, 9-03.01	
	TUBE FLARER, (tent.)	
	TUBE-FLARER HELPER, (tent.)	
	TUBING OILER, 9-03.01	
	TUBING TESTER, 6-78.671	
	AIR-PRESSURE TESTER, (tent.)	
	TUBING WASHER, 8-74.10	
7-89.056	WIREWORKER	
	CABLE STRETCHER, (tent.)	
	CAPPER AND BANDER, 9-03.01	
	COLOR TABBER, 9-03.01	
	WRAPPER AND SOLDERER, (tent.)	

Electrical Assembly
(0.5% to 1% of All Workers)

7-00.938 DETAIL-ELECTRICAL ASSEMBLER
- LUGGER, (tent.)
- SHIELD ASSEMBLER, (tent.)
- SHIELD INSTALLER, (tent.)
- SOLDERER, 6-95.001
  - SOLDERER, SMALL PARTS
- SPOOLING-MACHINE OPERATOR, 7-00.225
- TAG WRITER, (tent.)
- WIRE CUTTER, (tent.)
- WIRE TESTER, (tent.)

(tent.) ELECTRIC-EQUIPMENT TESTER

4-97.910 ELECTRICIAN, AIRPLANE
- ELECTRICIAN HELPER, AIRPLANE

7-00.938 GROUP LEADER III
- DETAIL-ELECTRICAL ASSEMBLER

Welded Assemblies
(0.5% to 2% of All Workers)

5-03.554 FITTING MAN
- FITTER XV, 7-03.562
- FITTING MAN HELPER, 9-03.01
- MOTOR-MOUNT MECHANIC, (tent.)
- PARTS FITTER II, 4-75.120
- WELD-SET-UP MECHANIC, 6-95.047

5-92.411 FOREMAN
- GROUP LEADER III
  - FITTING MAN, 5-03.554
  - WELDER ACETYLENE, 4-85.030
  - WELDER LEADMAN, 4-85.010

4-85.030 WELDER, ACETYLENE
- WELDER HELPER, ACETYLENE, 6-95.041

4-85.020 WELDER, ARC
- WELDER HELPER, ARC

4-85.040 WELDER, COMBINATION

Occupations Occurring in Some Plants:

6-78.613 FRICTION-SAWING-MACHINE OPERATOR
- ABRASIVE-WHEEL-FRICTION-SAWING-MACHINE OPERATOR

9-03.01 TUBING OILER

Miscellaneous Assembly
(0.5% to 2% of All Workers)

7-77.050	CANOPY ASSEMBLER
(tent.)	CEMENTER
(tent.)	CONTROLS ASSEMBLY MAN
7-03.542	DETAIL ASSEMBLER I OLEO ASSEMBLER SHROUDMAN II
5-03.540	DETAIL ASSEMBLER II FUEL-AND-OIL-UNITS ASSEMBLER HYDRAULIC-CONTROL-UNIT ASSEMBLER HYDRAULIC-STRUT ASSEMBLER SUPER-CHARGER REGULATOR ASSEMBLER, (tent.)
(tent.)	FIBRE WORKER
6-65.240	GLASS CUTTER
(tent.)	GUN-AND-TURRET-REWORKER
(tent.)	KNUCKLE BENDER KNUCKLE BENDER HELPER
5-77.040	PLEXIGLAS FORMER
(tent.)	SPAR-CAP SANDER
5-03.554	SUBASSEMBLER III INSTRUMENT-PANE ASSEMBLER LANDING-GEAR ASSEMBLER LANDING-GEAR-ASSEMBLER HELPER, 9-03.01 SMALL-PARTS ASSEMBLER IV

METAL PROCESSING DEPARTMENT SECTION 6

In the Processing Department:

(a) steel parts are electrolytically cadmium-plated to minimize corrosion; (b) aluminum parts are "anodized" (electrolytically oxidized at the anode of an electrolytic bath, thereby converting the surface of the aluminum into a thin film of aluminum oxide) to minimize corrosion and to provide a paint-adhering surface; (c) aluminum structural parts are heat-treated in a sodium nitrate salt or other bath at high temperatures to harden and strengthen the metal or to anneal the metal for further working; (d) steel parts are heat- treated for relieving strains; (e) steel parts are sandblasted to clean them and to provide a good plating or painting surface.

In large plants, this department may be broken down in sections such as: Anodizing; Steel Heat Treat; Dural Heat Treat; and Electroplating.

METAL PROCESSING - SECTION 6

(0.5% to 1% of All Workers in a Complete Aircraft Plant)

Occupations Occurring in Most Plants

Code	Title	% Range
4-74.010	ANODIC OPERATOR ANODIC-CLAMP REPAIRMAN, 6-74.930 ANODIC-OPERATOR HELPER, 9-03.01	12-18
4-78.020	DURAL HEAT-TREATER RIVET-HEAT-TREATER, 6-87.010	15-20
5-92.393	FOREMAN (heat treat.)	2-4
5-92.561	FOREMAN (electroplating) GROUP LEADER III PLATER I, 4-74.010	2-4
4-87.010	HEAT TREATER II ANNEALER, 6-87.110 HARDENER II, 4-87.220 NORMALIZER TOOL HARDENER, 4-87.230	5-10
8-87.10	HEAT TREATER HELPER I OILER AND GREASER, 9-03.01 PICKLING OPERATOR RACK LOADER II	5-10
4-74.010	PLATER I BUFFER I, 6-77.020 CADMIUM PLATER PLATER FOREMAN	12-20
8-74.10	PLATER HELPER CLEANER DEGREASER PICKLING OPERATOR RACKER V SAWDUST DRIER WASHER	5-15
6-82.720	SANDBLASTER I CABINET-ABRASIVE-BLAST MAN SANDBLAST-ROOM OPERATOR, 6-82.720 SANDBLASTER HELPER, 9-65.28	10-15
1-05.01	SHOP CLERK	1-2

Occupations Occurring in Some Plants

6-77.320	BURNISHER, HAND
8-74.10	BURNISHING-MACHINE OPERATOR
4-87.020	HEAT TREATER III
	HEAT TREATER HELPER II, 6-87.020
	METALLURGIST III (tent.)
9-65.21	LABORER (heat treat.)
8-87.10	LABORER, PROCESS (heat treat.)
9-65.28	LABORER (electroplating)
8-74.10	LABORER, PROCESS (electroplating)
	PARTS WIRER
	TUBING WASHER
6-77.060	POLISHER II
	POLISHER, BELT
7-03.546	TANK-FITTINGS ASSEMBLER
6-78.671	TANK TESTER

In this department the fabric, wood, and metal-covered surfaces of the aircraft are finished with coats of dope, paint, or varnish. The fabric-covered surfaces are brushed with dope for tautening and weatherproofing, sanded, and then sprayed with finish coatings of dope for further protection and camouflage. The wood pieces are filled, sanded, and then sprayed with enamel. Metal parts and assemblies are sanded and then sprayed with lacquer or enamel for protection and camouflage, except in the case of Alclad sheet aluminum skin plates which are to be left unpainted after final assembly. These pieces are dipped in a protective varnish and the smaller parts are re-dipped in paint. After final assembly the varnish is removed by means of a spray of a caustic solution and the surfaces washed and polished.

Specified surface areas which are to remain unpainted are covered with masking tape or a special cement prior to the spraying of surrounding areas.

In addition, specified stencils and insignia are applied to the aircraft.

In plants manufacturing aircraft with fabric-covered fuselages and/or wings, the doping occupations are found in a higher percentage. The wood sanding and painting occupations apply to plants manufacturing aircraft with wood member, such as trainers, gliders, and towplanes.

PAINTING AND FINISHING - SECTION 7

(2% to 4% of All Workers in a Complete Aircraft Plant)

Occupations Occurring in Most Plants

Code	Title	% Range
5-16.930	DOPER I	6-25
5-92.411	FOREMAN GROUP LEADER III PAINT-TOUCH-UP MAN, 7-16.550 PAINTER, SPRAY I, 7-16.210	3-5
9-03.01	LABORER, PROCESS MASHER OKITE CLEANER SANDER I SANDER, FABRIC STRIPPER WASH-TANK MAN I	5-10
9-65.43	LABORER SPRAY-BOOTH CLEANER, 9-65.47 STENCIL CUTTER III STENCIL CUTTER, HAND	0-5
7-16.550	PAINT-TOUCH-UP MAN	10-14
9-16.85	PAINTER HELPER II PAINT BOY, 7-89.363 PAINTER HELPER, 9-32.21	0-5
7-16.210	PAINTER SPRAY I PAINTER HELPER, INSIGNIA, 9-03.01 PAINTER HELPER, SPRAY, 9-16.21 PAINTER, INSIGNIA PAINTER, SPRAY II 9-16.20 PRIMER SPRAYER SPRAY MAN I	30-40
1-05.01	SHOP CLERK	1-3
5-16.930	SPRAY MAN II	2-8

Occupations Occurring in Some Plants

Code	Title
7-16.520	BRUSH HAND I
6-33.131	FILLER-AND WATER SANDER
1-38.01	PAINT STOCKMAN

7-16.930	PAINTER, DIP
5-27.910	PAINTER, SIGN
7-16.610	STRIPER, HAND I
7-16.580	STRIPER, MACHINE

TRIM AND COVERING SECTION 8

This department includes the fabrication and installation of the fabric surfaces and accessories of the aircraft; namely, wing and fuselage covers, seat covers, and miscellaneous articles such as stowage bags, tail boot covers, engine covers, etc.

The articles are cut to pattern from large rolls of material in stacks, with electric cutters, or singly, with shears. Preliminary sewing is done on machines with one or more needles, as required. The necessary fastening devices, such as snaps, grommets, and zippers, are secured in place by machine and by hand.

Finally, the fabric covers are stretched over their respective wood or metal fuselage frames and secured in place by hand operations of stapling, tacking, sewing, or placing of metal retainer strips held with screws. The interior furnishings are finished with the appropriate covering. When the wings, control surfaces, and fuselage have been sponged lightly with a sponge and cold water to remove wrinkles, the aircraft is ready for doping and painting.

Airplanes with fabric-covered fuselage and/or wings require many more workers in these occupations than for all-metal aircraft, but, in any case, practically all plants require some number of these workers.

TRIM AND COVERING - SECTION 8

(0.5% to 2% of All Workers in a Complete Aircraft Plant)

Occupations Occurring in Most Plants

Code	Title	% Range
5-03.010	AIRPLANE COVERER	50-65
	CONTROL SURFACE COVERER	
	FUSELAGE COVERER	
	RIB STITCHER, 7-03.010	
	SEWER, HAND I, 6-27.078	
	SEWER, HAND XVI, 7-03.010	
	TAPER IX, 9-03.01	
	VANE-STRIP INSTALLER, 7-03.001	
	WING COVERER	
6-27.054	CUTTER, MACHINE I	6-10
	FABRIC WORKER I 5-03.030	
	GROMMET-MACHINE OPERATOR, 9-03.01	
	LAY-UP MAN, 9-03.01	
	TRIMMER II	
	TRIMMER III, 6-27.816	
	TRIMMER HELPER VI, 9-03.01	
	UPHOLSTERY-AND-TRIM CUTTER, 6-27.060	
	ACCESSORY INSTALLER (tent.)	
(tent.)	FABRIC WORKER FOREMAN	
	GROUP LEADER III	
	SEWING-MACHINE OPERATOR, 6-27.502	
	CUTTER, MACHINE I, 6-27.054	
9-65.43	LABORER (aircraft)	0-2
9-03.01	LABORER, PROCESS (aircraft)	0-3
	UPHOLSTERY CLEANER I	
	UPHOLSTERY-MATERIAL MARKER	
6-27.502	SEWING-MACHINE OPERATOR	10-15
	SEWING-MACHINE OPERATOR, SINGLE NEEDLE	
	SEWING-MACHINE OPERATOR, DOUBLE NEEDLE	
	SEWING-MACHINE OPERATOR, FOUR NEEDLE	
	SEWING-MACHINE OPERATOR, MULTIPLE NEEDLE	
7-03.562	TRIMMER I	5-12
	COCKPIT-COWL-TRIM MAN	
	SEAT-AND-CARPET-INSTALLATION ASSEMBLER	
	SOUNDPROOFING INSTALLATION ASSEMBLER	
	TRIMMER HELPER VI, 9-03.01	

Occupations Occurring in Some Plants

4-62.020	CUTTER, HAND III
7-03.550	SOUNDPROOFING CUTTER CUTTER, HAND XV (tent.)
4-35.720	UPHOLSTERER II

SECTION 9

ASSEMBLY OF MAJOR METAL SECTIONS:

CONTROL SURFACES; MONOCOQUE FUSELAGES; ALL METAL WINGS

The work performed by this Section includes the assembly of the ribs, spars, longerons, stringers, and other component metal numbers into the main section; fitting the sheet metal skin; and all riveting operations. This section does not include the installation of subassemblies, fixtures, or other similar equipment.

ASSEMBLY OF MAJOR METAL SECTIONS:- SECTION 9

CONTROL SURFACES; MONOCOQUE FUSELAGES; WINGS
(Does not include installation of small subassemblies; see INSTALLATION ASSEMBLY)

(23% to 27% of All Workers in a Complete Aircraft Plant)

Occupations Occurring in Most Plants

Code	Title	% Range
1. Control Surfaces		
7-03.552	SUBASSEMBLER II	1-5
	CLEAN-UP MAN VII	
	SMALL-PARTS ASSEMBLER III	
	CONTROL-SURFACE ASSEMBLYMAN	
	AILERON ASSEMBLER	
	ELEVATOR ASSEMBLER	
	FLAP ASSEMBLER	
	RUDDER ASSEMBLER	
	TAP ASSEMBLER	
	SPAR BUILDER I	
	TAIL-SURFACE-FRAME BUILDER	
5-03.554	SUBASSEMBLER III	1-2
	SKELETON ASSEMBLER I	
	SKELETON-ASSEMBLER HELPER, 9-03.01	
2. Monocoque Fuselages		
5-03.552	MAJOR ASSEMBLER	5-15
	ASSEMBLYMAN VIII	
	ASSEMBLYMAN HELPER, 7-03.553	
	FUSELAGE ASSEMBLYMAN	
	GENERAL-AIRCRAFT ASSEMBLYMAN	
	SKIN MAN	
5-03.554	SUBASSEMBLER III	1-10
	SKELETON ASSEMBLER	
	SKELETON ASSEMBLER HELPER, 9-03.01	
3. All-Metal Wings		
5-03.552	MAJOR ASSEMBLER	2-10
	ASSEMBLYMAN VIII	
	ASSEMBLYMAN HELPER, 7-03.553	
	WING ASSEMBLYMAN	
	WING ASSEMBLYMAN HELPER, 7-03.553	
	CORRUGATION INSTALLER (tent.)	
	GENERAL-AIRCRAFT ASSEMBLER II	
	SKIN MAN	
7-03.552	SUBASSEMBLER II	1-5
	SPAR BUILDER	
	WING-TIP ASSEMBLER	

5-03.554	SUBASSEMBLER III SKELETON ASSEMBLER HELPER, 9-03.01 SKELETON ASSEMBLER HELPER, 9-03.01 WING-FRAME BUILDER	1-5

4. General

6-95.080	BUCKER-UP IV	5-20
5-92.411	FOREMAN GROUP LEADER	7-20
(tent.)	REAMER IV REAMER HELPER	0-3
6-95.080	RIVETER, AIRCRAFT RIVET SQUEEZER (tent.) RIVETER, HAND IV, 6-95.081 RIVETER, PNEUMATIC II, 6-95.082	20-35

WOOD MEMBER FABRICATION AND ASSEMBLY - SECTION 10

Wood members of the aircraft, such as wings, ribs, fins, ailerons, rudders, and stabilizers, are cut and shaped in the Wood Mill Section. Patterns and templates are used to mark off irregularly shaped parts before they are cut to size. All parts are cut and shaped on powered wood-working machines, involving such processes as ripping, cross-cutting, bandsawing, planing, shaping, jointing, and routing, and all work is done to close tolerances.

In the Wood Assembly Section the ribs and longitudinal members are assembled in forming jigs and fastened securely together with waterproof glue and nails to form a strong framework in the exact shape of the aircraft member. Thin mahogany plywood is shaped and fitted (in some cases pre-shaped plywood is used) and then glued to the assembled framework. When the member has been sanded and finished it is ready to be sent to the Painting and Finishing Department from which it is sent to the Final Installation Assembly Department where it is attached to the aircraft.

This Section in its entirety only occurs in plants manufacturing airplanes with main wood sections, generally plywood covered.

WOOD FABRICATION AND ASSEMBLY - SECTION 10

(12% to 15% of All Workers in a Complete Aircraft Plant
Manufacturing Aircraft with Wood Members, such as
Trainers, Gliders, and Towplanes)

Occupations Occurring in Most Plants

Code	Title	% Range
1. Wood Mill		
5-91.501	FOREMAN	1-2
9-63.76	LABORER	0-1
8-33.11	LABORER, PROCESS	0-1
4-33.914	MILLMAN BAND-RIPSAW OPERATOR, 6-33.211 BELT-SANDER, 6-33.111 CIRCULAR-RIPSAW OPERATOR, 6-33.211 CUT-OFF-SAW OPERATOR, TREADLE OPERATOR, 6-33.214 DOUBLE-CUT-OFF SAW OPERATOR, 6-33.214 JOINTER OPERATOR III, 6-33.462 MILLMAN HELPER II, 8-33.11 PLANER OPERATOR IV, 4-33.461 ROUTER OPERATOR I, 4-33.411 SHAPER OPERATOR II, 6-33.364 SWINGING-CUT-OFF SAW OPERATOR, 6-33.214	8-12
7-99.820	MILLMAN APPRENTICE	1-3
7-84.230	SAW FILER, HAND	0-1

Occupations Occurring in Some Plants

Wood Mill	
6-33.212	BAND-SCROLL-SAW OPERATOR
4-29.510	GRADER VIII
6-33.212	JIGSAW OPERATOR I
6-33.373	LATHE HAND, AUTOMATIC
4-33.912	LAY-OUT MAN
9-63.76	LUMBER HANDLER
5-83.311	MACHINE-SET-UP MAN IV
6-33.464	MOLDER OPERATOR III
7-84.240	SAW FILER, MACHINE

	SAW FILER HELPER, MACHINE, 9-65.64	
6-33.222	TRIM SAWYER I	
4-33.311	UNIVERSAL-WOODWORKING-MACHINE OPERATOR	
6-33.224	VARIETY-SAW OPERATOR	
6-39.996	WOOD BENDER	

Occupations Occurring in Most Plants

Wood Wing Assembly

6-33.925	AIRPLANE WOODWORKER II AIRPLANE WOODWORKER HELPER, 8-33.11 CENTER-SECTION ASSEMBLER FIN ASSEMBLER RIB BUILDER SPAR BUILDER II SPAR FINISHER STABILIZER ASSEMBLER TURTLE-BACK MAN WING ASSEMBLER II	65-80
6-33.411	BORING-MACHINE OPERATOR, VERTICAL BORING-MACHINE OPERATOR, HORIZONTAL	1-3
5-91.501	FOREMAN	1-2
6-53.432	GLUE MIXER	1-2
6-33.925	GROUP LEADER III AIRPLANE WOODWORKER II	3-6
6-33.918	NAILING-MACHINE OPERATOR	1-3
1-05.01	SHOP CLERK	1-3

Occupations Occurring in Some Plants

Wood Wing Assembly

6-33.412	BORING-MACHINE OPERATOR, MULTIPLE SPINDLE
4-32.100	CABINET MAKER I
9-03.01	DRILL-PRESS OPERATOR VII
6-33.914	GLUEMAN III

7-02.321	GLUEMAN, ASSEMBLY
9-03.01	VENEER GLUER I

SECTION 11

WELDED TUBULAR FUSELAGE

This section builds up and welds the tubular steel fuselages (usually chrom-molybdenum steel) for such aircraft as trainers, observation planes, and transport gliders.

WELDED TUBULAR FUSELAGE - SECTION 11

(3% to 4% of All Workers in a Complete Aircraft Plant
Manufacturing Aircraft with Tubular Fuselage Only)

Occupations Occurring in Most Plants

Code	Title	% Range
5-03.554	FITTING MAN FITTER XV, 7-03.562 FITTING-MAN HELPER, 9-03.01 FUSELAGE-FRAME BUILDER PARTS FITTER II, 4-75.120 SIDE-FRAME BUILDER STRAIGHTENER AND PARTS FITTER, 5-03.560 TRUSS ASSEMBLER WELD-SET-UP MECHANIC, 6-95.047	40-50
5-92.411	FOREMAN GROUP LEADER FITTING MAN, 5-03.554 WELDER, COMBINATION, 4-85.040 WELDER LEADMAN, 4-85.010	5-10
6-78.613	FRICTION-SAWING-MACHINE OPERATOR ABRASIVE-WHEEL-FRICTION-SAWING-MACHINE OPERATOR TUBE CUTTER V, 8-93.86	1-2
9-03.01	TUBING OILER	1-2
485.030	WELDER, ACETYLENE WELDER HELPER, ACETYLENE, 6-95.041	30-40
4-85.020	WELDER, ARC WELDER HELPER, ARC	0-15

Occupations Occurring in Some Plants

Code	Title
6-77.510	BURRER, HAND
6-82.720	SANDBLASTER I
5-03.554	SKELETON ASSEMBLER I FRAMER, BODY MINORS (tent.) SKELETON ASSEMBLER HELPER, 9-03.01
4-85.040	WELDER, COMBINATION

FINAL ASSEMBLY AND INSTALLATION (INCLUDING FIELD SERVICE)

SECTION 12

The types of work performed in this department are basically the same regardless of the type of airplane produced, although job combinations will vary.

In this department the wings are mounted, power plant and propeller installations completed, furnishings, armament, radio and miscellaneous equipment installed, and all final engine and flight control rigging finished. All assemblies are checked, functional tests are made of the hydraulic and electrical systems; and the entire airplane is cleaned out preparatory to painting and preflight testing. Large plants separate the installation and final assembly departments, but many of the occupations overlap.

Installation and Final Assembly

Tubing for fuel, oil,and hydraulic systems and their supporting fixtures and brackets are installed in wings and fuselages and bolted or clamped in place.

All electrical and radio conduit is installed in wings and fuselages and clamped or bolted to structural members and junction boxes.

Assembled hydraulic control units are bolted or riveted in place in major airplane assemblies; previously installed hydraulic lines connected to the units and the systems are tested.

Boilers, steam bottles, steam and hot water pipes, air ducts, radiators, insulation, control valves, and various fittings are then installed with hand tools according to process sheets.

Structures, and subassemblies, such as wash basins, toilet assemblies, floors, cargo compartment doors, corrugated sheet metal and canvas wall panels, control columns, control pedestals are installed and fastened in place with screws, bolts or rivets.

Pulley, pulley brackets, and small fibre blocks, to prevent chafing of cables, are bolted or riveted to fuselage and wing structure, and operating cables for flight control surfaces and engine controls are run over the pulleys.

Rectangular pieces of cellulose soundproofing material are glued in place to the inside skin of fuselages. Cellulose fibre sheets, cloth padding and lining, and leather panels are stretched and fitted in place in the interior of the airplane and fastened with screws or metal trimmings.

Trimming material for airplane seats and carpeting material for floors are cut to size with hand shears, hand knives, or Electric Fabric Cutters and fastened in place with tacks, cement and aluminum alloy strips. Safety belts, straps, and other furnishings are attached to the seats.

Assembled engines are hoisted into position for installation; engine mount bolt holes are aligned with matching bolt holes in supporting members on the airplane, bolts inserted in the aligned holes and tightened with torque wrenches, and all control cables, wire, hose, plumbing, and instrument line fittings on the engines, connected to corresponding fittings on the airplane and the control cables, are adjusted and tested for proper tension.

Cowling assemblies are fitted around the airplane engine and fastened and connected to control fittings.

Previously cleaned and assembled propellers and accessories are hoisted, fastened on to the propeller shafts, and their pitch control mechanisms adjusted.

Instruments, instrument panel assemblies, gyropilots and their accessories are mounted in the airplane, flushed with kerosene or blown out with compressed air, and connected and tested for leaks, and the operation of installed gyropilot systems is checked and adjusted.

Skin surfaces, such as streamlining fillets and fairing are now fitted, trimmed, and riveted in place.

Sheet metal subassemblies, furnishings and equipment, such as the wings, wing tips, fairing, inspection hole covers, flight control surfaces, fire extinguishers, and armament accessories, are adjusted, reworked, and correctly fitted, positioned and fastened to or in the airplane.

Flight control surfaces are aligned and connected to their respective control cables which, in turn, are connected to corresponding flight control actuating devices, such as control columns and rudder pedals and the cable fittingsadjusted to the proper tension.

Previously installed radio lines and apparatus, intercommunication systems, armament equipment, generators, batteries, lighting and heating systems, and other wiring with electrical equipment are checked.

Service and Flight Test

Completed airplanes are rolled onto the field for ground testing, their tanks filled with oil and gasoline, their engines started, and all the controls for the engine, propeller, landing gear, fuel system, pump, and flight control surfaces operated to determine that they are in proper working order for the test flight.

The motors are started and run at gradually increasing speeds for a determined period while skilled mechanics check their performance and make the necessary adjustments to the controls and instruments. After the engine run, the ship is again serviced and released to the pilot for the test flight.

INSTALLATION AND FINAL ASSEMBLY (INCLUDING FIELD SERVICE)

SECTION 12

(15% to 18% of All Workers in a Complete Airframe Plant)

Occupations Occurring in Most Plants

Code	Title	% Range
	1. Installation Assembly (8% to 12% of All Workers)	
4-97.910	ELECTRICIAN, AIRPLANE	1-2
	ELECTRICIAN HELPER, AIRPLANE, 9-03.01	
General	GROUP LEADER III	3-5
	GENERAL-AIRCRAFT ASSEMBLER III, 7-03.562	
	INSTALLATION MECHANIC, 5-03.562	
	PLUMBER, AIRCRAFT, 5-03.562	
	SHEET-METAL ASSEMBLER, 7-03.562	
5-92.411	FOREMAN	1-2
5-03.572	MAJOR-ASSEMBLY INSTALLER	1-3
	FUEL-SYSTEM INSTALLER	
	HYDRAULIC-SYSTEM CHECKER	
5-03.562.	SUBASSEMBLY INSTALLER I	10-20
	ARMAMENT INSTALLER I, (tent.)	
	ARMAMENT INSTALLER II, (tent.)	
	ENCLOSURE INSTALLER, (tent.)	
	EXHAUST-STACK INSTALLER, (tent.)	
	FUSELAGE ASSEMBLYMAN II	
	HEATING-AND-VENTILATING INSTALLATION ASSEMBLER	
	INSTALLATION MECHANIC	
	INSTALLATION MECHANIC HELPER, 9-03.01	
	NACELLE ASSEMBLYMAN, (tent.)	
	NACELLE INSTALLER, (tent.)	
	OUTBOARD-WING ASSEMBLER, (tent.)	
	PLUMBER, AIRCRAFT	
	AIRPLANE-HEATER MAN, (tent.)	
	PLUMBER HELPER, AIRCRAFT	
	PLUMBER, WING INSTALLATIONS	
7-03.562	SUBASSEMBLY INSTALLER II	10-20
	ARMOR-PLATE INSTALLER, (tent.)	
	ASSEMBLYMAN IX	
	COCKPIT-COWL-TRIM MAN	
	ELECTRIC-CONDUIT INSTALLER	
	FAIRING INSTALLER, (tent.)	
	FAIRING INSTALLER HELPER, 9-03.01	
	FINAL ASSEMBLER IV	

- FITTER XV
    - FITTING-SHIELD-AND-BRACKET INSTALLER, (tent.)
- GANG-NUT INSTALLER, (tent.)
    - GANG-NUT INSTALLER HELPER, (tent.)
- GENERAL-AIRCRAFT ASSEMBLER III
- HEAT-AND-VENT-INSTALLER
- HYDRAULICS-AND-FUEL-SYSTEM ASSEMBLER, (tent.)
- INBOARD-WING ASSEMBLYMAN, (tent.)
- RUBBER-TEX INSTALLER, (tent.)
    - RUBBER-TEX-INSTALLER HELPER, (tent.)
- SEAT-AND-CARPET-INSTALLATION ASSEMBLER
- SHEAR-PLATE INSTALLER, (tent.)
- SHEET METAL ASSEMBLER
- SHIELD-AND-CONDUIT INSTALLER, (tent.)
- SHIELDING INSTALLER, (tent.)
- SOUNDPROOFING-INSTALLATION ASSEMBLER
- SUPERCHARGER-COWLING INSTALLER
- TRIMMER I
- WINDOW INSTALLER, (tent.)
- WING-COVER INSTALLER, (tent.)
- WING-FLAP INSTALLER, (tent.)

2. Final Assembly
(4% to 6% of All Workers)

4-33.916	AIRPLANE WOODWORKER I	0-1
	AIRPLANE WOODWORKER HELPER, 6-33.927	
5-83.447	ELECTRICIAN, AIRCRAFT RADIO	1-2
4-97.910	ELECTRICIAN, AIRPLANE	1-3
	ELECTRICIAN HELPER, AIRPLANE, 9-03.01	
	ELECTRICIAN, WING	
	FINAL PICK-UP MAN, ELECTRICAL (tent.)	
General	GROUP LEADER III	3-5
	ASSEMBLYMAN VIII, 5-03.552	
	ELECTRICIAN, AIRPLANE, 4-97.910	
	FINAL ASSEMBLER I, 5-03.572	
	GENERAL-AIRCRAFT ASSEMBLER II, 5-03.552	
	RIGGER IX, 5-03.572	
5-92.411	FOREMAN	1-2
5-83.972	INSTRUMENT MAN IV	0-1
	INSTRUMENT-MAN HELPER, 9-03.01	
	VACUUM-SYSTEM TESTER, (tent.)	

- 5-03.552 MAJOR ASSEMBLER — 5-10
  - ASSEMBLYMAN VIII
    - ASSEMBLYMAN HELPER II, 7-03.553
  - CENTER-SECTION ASSEMBLYMAN
  - GENERAL-AIRCRAFT ASSEMBLER II
  - SKIN MAN
  - WING INSTALLER, (tent.)

- 5-03.572 MAJOR-ASSEMBLY INSTALLER — 10-20
  - DISASSEMBLER
  - FINAL ASSEMBLER I
    - CLEAN-UP MAN VIII
    - FINAL-ASSEMBLER APPRENTICE, (tent.)
    - FINAL-ASSEMBLER HELPER, 9-03.01
  - FIXED-FLIGHT-SURFACE INSTALLER
  - HYDRAULIC-SYSTEM CHECKER
  - LANDING-GEAR-AND-DOOR INSTALLER, (tent.)
  - LANDING-WHEEL INSTALLER
  - PLUMBER, FINAL ASSEMBLY
  - RIGGER IX
    - (AIRPLANE RIGGER I, 5-80.500)
    - FLIGHT-AND-ENGINE-CONTROL RIGGER, (tent.)
    - RIGGER HELPER III
    - RIGGER X, (tent.)

3. Engine Installation

(1% to 2% of All Workers)

- 5-92.411 FOREMAN

- 5-03.572 GROUP LEADER III
  - ENGINE-INSTALLATION ASSEMBLER

- 5-03.572 MAJOR-ASSEMBLY INSTALLER — 2-4
  - ENGINE INSTALLATION ASSEMBLER
    - ENGINE-INSTALLATION ASSEMBLER HELPER, 9-03.01
    - ENGINE PREPARER

- 5-03.562 SUBASSEMBLY INSTALLER I — 0-1
  - ENGINE-CONTROL INSTALLER, (tent.)
  - ENGINE-CONTROL INSTALLER, FUSELAGE INSTALLATIONS, (tent.)
  - ENGINE-CONTROL INSTALLER, WING INSTALLATIONS, (tent.)
  - EXHAUST-STACK INSTALLER, (tent.)

4. Field Service

(0.5%-2% of All Workers)

Note: See SECTION B, INSPECTION for other TESTERS

- 5-80.130 AIRCRAFT-ENGINE MECHANIC — 1-3

	AIRCRAFT-ENGINE-MECHANIC APPRENTICE, 7-99.050	
	AIRPORT SERVICE MAN, 7-49.028	
	BATTERY MAN II, 5-89.411	
	CARBURETOR MAN I, 5-80.300	
	ENGINE MAN, 5-80.352	
	ENGINE-TESTER, 5-80.350	
	FUEL-SYSTEM TESTER, (tent.)	
	OXYGEN-SYSTEM TESTER, (tent.)	
	SPARK-PLUG TESTER, (tent.)	
	STARTING-AND-RETRACTING-MOTOR TESTER	
5-80.120	AIRCRAFT MECHANIC	1-3
	AIRCRAFT-MECHANIC HELPER	
	DISASSEMBLER	
	HYDRAULIC-FIELD SERVICE MECHANIC	
(tent.)	ARMAMENT MECHANIC	0-1
5-83.447	ELECTRICIAN, AIRCRAFT RADIO	1-2
	ELECTRICIAN, RADIO I, 5-83.445	
	RADIO MECHANIC II	
	RADIO MECHANIC, AIRCRAFT, INSTALLATIONS	
	RADIO REPAIRMAN I, 5-83.411	
4-97.910	ELECTRICIAN, FIELD SERVICE	
	ELECTRICIAN HELPER, AIRPLANE	0-1
(tent.)	FERRY PILOT	
	RADIO OPERATOR, 0-61.30	
5-83.972	INSTRUMENT MAN IV	0-1
	INSTRUMENT MAN HELPER, 9-03.01	0-1
(tent.)	TEST PILOT	0-1

INSPECTION SECTION 13

Inspection is performed in every stage of manufacture and assembly of the airplane.

Incoming raw, partially processed, and processed parts are checked for quantity and quality of workmanship and conformance to specifications.

Materials received from the receiving inspectors are then inspected to determine if they have the required hardness, tensile strength, and other physical and chemical properties.

Tools and gages are inspected for accuracy and conformity to blueprint and bench order specifications, and are reset and adjusted as necessary. Jigs are examined to see that they are correctly fabricated. erected and maintained.

Fabricated parts are tested to determine if they meet specifications and that they contain no defective material or workmanship.

Nonstructural assemblies, such as tubing, cables, electric wires, shields, and shield installations are inspected for dimensioning, correct alignment, and quality of construction. Next, the inspectors examine structural subassemblies for conformity to specifications and adequacy of riveting. Parts with bad rivets, welds, or poor nailing and glueing are rejected.

Machine assemblies are tested to determine their working order. In conjunction with final assembly, the inspectors examine wing and body structures and final assembly of the plane. Installations of accessories on airplane motors are tested, as are the operations of controls, vacuum, and hydraulic equipment, etc.

Inspectors next examine the painting on airplanes and the operation of all parts prior to test flight. Before parts, material or equipment are shipped from the plant, they are again subjected to examination by the inspectors.

The workers are usually grouped together for organization in a separate inspection, but in some plants, some of these workers may be carried in the organization of production departments.

INSPECTION - SECTION 13

(3% to 4% of All Workers in a Complete Aircraft Plant)

Occupations Occurring in Most Plants

Code	Title	% Range
5-80.910	AIRPLANE INSPECTOR II	0-1
	SERVICE-AND-FLIGHT INSPECTOR	
Gen. Term	DETAILS INSPECTOR	1-2
	CONTROL-CABLE INSPECTOR, 7-89.055	
	FINAL-TANK INSPECTOR (tent.)	
4-97.930	ELECTRICAL INSPECTOR II	2-4
	RADIO-AND-ELECTRICAL INSPECTOR	
5-03.812	FINAL ASSEMBLY INSPECTOR	10-15
	ARMAMENT INSPECTOR, (tent.)	
	ELECTRICAL-TEST INSPECTOR, (tent.)	
	ENGINE-AND-HYDRAULIC INSPECTOR, (tent.)	
	EQUIPMENT INSPECTOR, (tent.)	
	FINAL-ASSEMBLY INSPECTOR, ENGINE INSTALLATION, (tent.)	
	MISCELLANEOUS-EQUIPMENT TESTER, (tent.)	
(tent.)	FLIGHT-CONTROL INSPECTOR	0-1
5-92.411	FOREMAN	3-5
	GROUP LEADER III	
	FINAL ASSEMBLY INSPECTOR, 5-03.812	
	INSPECTOR (Mach. Shop), 6-74.230	
	SHEET-METAL INSPECTOR, 5-03.820	
	WOOD INSPECTOR, 4-33.918	
4-87.910	HARDNESS INSPECTOR	1-2
	BRINELL-HARDNESS TESTER	
	ROCKWELL-HARDNESS TESTER	
	SCLEROSCOPE-HARDNESS TESTER	
5-03.840	HYDRAULIC TESTER II	0-1
(tent.)	INSPECTOR, HAMMERS AND PRESSES	0-1
6-74.230	INSPECTOR (Machine Shop)	15-20
	BENCH-ASSEMBLY INSPECTOR	
	FIRST-PART INSPECTOR, MACHINE SHOP, (tent.)	

	GAGER I, 6-78.672 INSPECTOR, STRUCTURAL ASSEMBLY, (tent.) MACHINED-PARTS INSPECTOR METAL-FITTINGS INSPECTOR, 6-78.675 SHIPPING INSPECTOR I TESTER I, 6-78.671 TUBING TESTER TESTER II, 6-78.671 AIR-PRESSURE TESTER TANK-TESTER II	
5-83.973	INSTRUMENT INSPECTOR	0-1
4-78.674	MAGNAFLUX INSPECTOR MAGNAFLUX OPERATOR, 6-78.674 MAGNETIC INSPECTOR, 6-78.674 STEELSCOPE OPERATOR, 6-78.674	1-2
6-78.675	METAL-FITTINGS INSPECTOR	0-1
5-16.932	PAINT INSPECTOR III PAINT-DOPE-AND-COVERING INSPECTOR, 7-03.818 PAINT-SPRAY INSPECTOR, 7-03.744	1-2
5-17.257	PATTERN-AND-FOUNDRY INSPECTOR I CASTING INSPECTOR, 6-82.920	0-1
(tent.)	RECEIVING INSPECTOR CHECKER, MATERIAL TEST, (tent.) TECEIVING CHECKER II, 1-34.15	1-2
6-95.085	RIVET INSPECTOR II	0-2
(tent.)	SALVAGE INSPECTOR II	0-1
5-03.820	SHEET-METAL INSPECTOR I CHECKER, 4-78.675 SHEET-METAL INSPECTOR II, 6-78.676 TUBING-INSPECTOR II, 6-78.677	15-30
1-34.17	SHIPPING CHECKER II	0-1
1-05.01	SHOP CLERK MATERIAL-TEST CLERK, 9-65.43	1-2
4-76.220	TOOL INSPECTOR GAGE INSPECTOR GLEASON-INDICATOR OPERATOR JIG INSPECTOR TEMPLATE INSPECOTR, 4-80.025 TOOL-AND-DIE INSPECTOR TOOL-SALVAGE MAN	5-10

5-03.850	TRIM-AND-COVER INSPECTOR SHIPPING INSPECTOR II, 7-59.433 UPHOLSTERY-AND-TRIM INSPECTOR, 7-59.433	1-2
4-85.070	WELDING INSPECTOR WELDED-PARTS INSPECTOR	1-3
4-33.918	WOOD INSPECTOR	1-20

Occupations Occurring in Some Plants

5-03.810	AIRPLANE INSPECTOR AIRSHIP INSPECTOR, 5-03.830	
4-29.510	LUMBER INSPECTOR I	
6-94.218	METAL-STAMPING INSPECTOR	
7-00.222	MICROMETER INSPECTOR	
(tent.)	REWORK INSPECTOR	
(tent.)	SPECIAL ASSIGNMENTS INSPECTOR	

Note: See FIELD SERVICE under SECTION 12 for other TESTERS

PLANT MAINTENANCE - SECTION 14

The Plant Engineer is responsible for the functions of this department. Included are (a) building construction, alteration, and repair; (b) erection, installation, and repair of machinery; (c) erection, installation and repair of equipment; (d) professional and technical occupations related to plant maintenance; (e) operation of Power Plant; (f) operation of hoisting equipment; (g) and janitorial work.

PLANT MAINTENANCE - SECTION 14

(3% to 5% of All Workers in a Complete Aircraft Plant)

Occupations Occurring in Most Plants

Code	Title
1. General Maintenance	
5-25.830	CARPENTER, MAINTENANCE
(tent.)	DISPATCHER, MAINTENANCE SERVICE
4-97.420	ELECTRICIAN, CHIEF I ELECTRICAL REPAIRMAN ARMATURE WINDER, I, 6-99.011 ARMATURE WINDER II, 6-99.011 ELECTRIC-MOTOR REPAIRMAN, 5-83.433 ELECTRICIAN, 4-97.010 ELECTRICIAN HELPER, 9-65.43
4-75.010	MACHINIST, MAINTENANCE
5-83.641	MAINTENANCE MECHANIC II MAINTENANCE MAN, FACTORY OR MILL, 5-83.621 MAINTENANCE MECHANIC HELPER, 9-65.43 OILER I, 9-71.01
5-83.621	MASTER MECHANIC, MAINTENANCE
5-78.100	MILLWRIGHT MILLWRIGHT HELPER, 9-65.43 RIGGER V, 9-65.64
5-27.010	PAINTER, MAINTENANCE
5-30.010	PIPE FITTER FOREMAN PIPE FITTER, MAINTENANCE PIPE FITTER APPRENTICE, 7-96.200 PIPE FITTER HELPER, 7-32.811 PIPE-THREADING-MACHINE OPERATOR, 6-95.058
4-80.010	SHEET-METAL WORKER SHEET-METAL-WORKER APPRENTICE, 7-97.040 SHEET-METAL-WORKER HELPER, 6-94.201
4-85.040	WELDER, COMBINATION WELDER, ACETYLENE, 4-85.030 WELDER APPRENTICE, COMBINATION, 7-99.035 WELDER, ARC, 4-85.020

WELDER FOREMAN, COMBINATION
WELDER, HELPER, COMBINATION, (tent.)

Occupations Found in Some Plants

6-85.210	ACETYLENE BURNER OPERATOR
7-72.580	AIR-COMPRESSOR OPERATOR
5-33.110	ASBESTOS WORKER, GENERAL
5-81.010	AUTOMOBILE MECHANIC
7-81.010	AUTOMOBILE MECHANIC HELPER
7-83.611	BELTMAN I
4-80.010	BENCH HAND IV
7-22.540	CONVERYOR MAN II

2. Power Plant

7-70.040	FOREMAN, STATIONARY BOILER
5-72.020	MAINTENANCE ENGINEER I
5-51.010	POWER-HOUSE ENGINEER POWER-HOUSE OILER, 7-71.010
5-72.010	STATIONARY ENGINEER
7-54.622	WATER TENDER III

3. Janitorial

2-82.10	CHARWOMAN
3-40.04	GROUNDS KEEPER
2-84.10	JANITOR I
2-86.20	PORTER II

4. Plant Engineering

0-48.08	DRAFTSMAN, CONSTRUCTION
0-48.11	DRAFTSMAN, ELECTRICAL
0-48.12	DRAFTSMAN, HEAT AND VENTILATING

0-48.22	DRAFTSMAN, PLUMBING
0-48.25	DRAFTSMAN, STRUCTURAL
0-17.01	ELECTRICAL ENGINEER
0-19.01	FACTORY LAY-OUT MAN
0-19.01	INSTALLATION ENGINEER
0-19.01	MECHANICAL ENGINEER
0-19.01	PLANT ENGINEER

5. Crane Operators

9-65.43	CRANE FOLLOWER
5-73.010	ELECTRIC-BRIDGE-CRANE-OPERATOR ELECTRIC-GANTRY-CRANE OPERATOR, 5-73.040 ELECTRIC-MONORAIL-CRANE OPERATOR, 5-73.020

6. Elevators

2-95.30	ELEVATOR OPERATOR, FREIGHT
2-95.30	ELEVATOR OPERATOR, PASSENGER

ENGINEERING - SECTION 15

This section includes (1) those occupations in the design of improvements for current airplanes, and the design of new aircraft, including experimental work (2) industrial engineering, including production and methods planning (3) other specialist types of engineering such as tool designing, metallurgical, chemical, salvage, and safety engineering (4) those semi-professional and clerical occupations common to the entire section.

ENGINEERING - SECTION 15

(All except plant engineering, which is found under MAINTENANCE SECTION 14)

(2%-3% of all Workers)

Occupations Occurring in Most Plants

Code	Title
	Aeronautical Engineering and Experimental
0-19.03	AERONAUTICAL ENGINEER
	AERODYNAMIST, (tent.)
	AIRPLANE DESIGNER
	FLIGHT ANALYST, (tent.)
	RESEARCH ANALYST, (tent.)
	RESEARCH-AND-STATIC-TEST MECHANIC, (tent.)
	STRESS ANALYST, AIRCRAFT, (tent.)
0-48.01	DETAILER II
	DRAFTSMAN, DETAIL
	ESTIMATOR IV, 0-68.64
0-48.04	DRAFTSMAN, AERONAUTICAL
(tent.)	ENGINEERING CHECKER
(tent.)	ENGINEERING-LIAISON MAN
(tent.)	EXPERIMENTAL-BODY-AND-MINOR ASSEMBLER
(tent.)	TEST PILOT
(tent.)	WEIGHT ANALYST
(tent.)	WIND-TUNNEL-MAINTENANCE MAN
	Planning and Industrial Engineering
0-68.64	ESTIMATOR IV
0-18.01	INDUSTRIAL ENGINEER
	JOB ANALYST, 0-68.72
	TIME-STUDY ENGINEER
	TIME-STUDY MAN II, 0-68.73
General	PLANNER, (tent.)
	ASSEMBLY PLANNER
	GENERAL-TOOL PLANNER
	LIAISON PLANNER

  - DEVELOPMENT PLANNER
- MACHINE-SHOP-LOAD ESTIMATOR
- PLANNING STATISTICIAN
- PROCESS PLANNER
- PRODUCTION PLANNER
  - PRODUCTION PLANNER, EXPERIMENTAL
- TOOL PLANNER
  - CONTRACT-CHECKING CLERK
  - TOOL-PROJECT MAN

General Occupations

0-48.18	DRAFTSMAN, MECHANICAL
1-35.01	ENGINEERING CLERK
	BLUE-PRINTING-MACHINE OPERATOR I, 7-86.330
	BLUE-PRINTING-MACHINE OPERATOR II, 7-86.440
	CALCULATING-MACHINE OPERATOR, 1-35.13
0-68.64	ESTIMATOR IV
1-17.02	FILE CLERK, DRAWINGS
0-68.61	SPECIFICATION WRITER, ENGINEERING
0-48.31	TRACER IV

Miscellaneous Engineers

0-15.01	CHEMICAL ENGINEER
0-48.42	DIE DESIGNER
0-17.01	ELECTRICAL ENGINEER
0-19.01	MECHANICAL ENGINEER
	MACHINERY-AND-TOOL DESIGNER
	MECHANICAL ENGINEER, JUNIOR, 0-19.02
0-07.32	METALLURGIST II
0-18.01	SAFETY ENGINEER II
0-19.04	SALES ENGINEER
0-19.91	SALVAGE ENGINEER
0-48.41	TOOL DESIGNER
	DIE-INCREMENT ANALYST, (tent.)
	TOOL-DRAWING CHECKER, (tent.)
0-19.05	WELDING ENGINEER

ADMINISTRATIVE AND CLERICAL - SECTION 16

This section includes those occupations common in the so-called overhead departments, such as the general business office, payroll, accounting, protection, and personnel sections.

Administrative and Clerical Occupations Included in the Executive and Business Offices of the Plant are as Follows:

(6% to 8% of All Workers in a Complete Aircraft Plant)

Occupations Occurring in Most Plants

Code	Title
1. Managerical (Administrative)	
0-97.41	MANAGER, INDUSTRIAL ORGANIZATION
0-97.12	MANAGER, OFFICE I
0-97.51	MANAGER, PRODUCTION I
0-97.01	PRESIDENT
0-97.03	SECRETARY, ADMINISTRATIVE
0-97.04	TREASURER
0-97.02	VICE PRESIDENT
2. Personnel	
0-39.81	DIRECTOR, EDUCATIONAL
0-27.11	DIRECTOR, WELFARE
0-68.71	EMPLOYMENT INTERVIEWER
2-38.10	FIRST-AID ATTENDANT
0-26.10	GENERAL PRACTITIONER
0-68.72	JOB ANALYST
0-39.82	MANAGER, EMPLOYMENT
0-39.83	MANAGER, PERSONNEL
0-33.10	NURSE, INDUSTRIAL
1-18.32	PERSONNEL CLERK

3. General

0-01.10	ACCOUNTANT, COST
0-01.20	ACCOUNTANT, GENERAL ACCOUNTANT, CHIEF
0-01.60	AUDITOR
1-01.02	BOOKKEEPER
1-25.13	CALCULATING-MACHINE OPERATOR
0-97.13	CHIEF CLERK I
1-04.01	CLERK, GENERAL
1-05.01	CLERK, GENERAL OFFICE
1-37.34	CLERK-TYPIST
0-01.70	CONTROLLER
1-17.01	FILE CLERK
2-36.31	GUIDE, FACTORY
1-26.02	PAYROLL CLERK
1-18.32	PERSONNEL CLERK
0-91.60	PURCHASING AGENT
1-18.43	RECEPTIONIST II
1-33.01	SECRETARY
(tent.)	SHOP CLERK, CHIEF
1-27.12	STENOGRAPHER
4-87.410	SWITCHBOARD OPERATOR II
1-42.32	TELEPHONE OPERATOR II
1-26.03	TIMEKEEPER TIMEKEEPER RUNNER (tent.)

1-37.32	TYPIST
2-61.03	WATCHMAN I
2-61.04	WATCHMAN II

RECEIVING, STORAGE, TRANSPORTATION, AND SHIPPING - SECTION 17

This section includes those occupations involved in the receiving of materials entering the plants, storage of raw and partially processed materials, storage of tools, intraplant and outside transportation, and shipping.

Occupations in stock and tool storage are organized in many plants under the departments which they serve, but have been grouped here for convenience.

RECEIVING, STORAGE, TRANSPORTATION, AND SHIPPING
SECTION 17

(2% to 4% of All Workers)

Occupations Occurring in Most Plants

Code	Title
1. General	
1-05.01	SHOP CLERK SHOP CLERK, CHIEF (tent.) PARTS-NUMBERER-AND-REWORK MAN (tent.)
2. Receiving	
9-65.43	CAR UNLOADER I
1-34.04	RECEIVING CLERK III RECEIVING CHECKER II, 1-34.15
(tent.)	RECEIVING INSPECTOR CHECKER, MATERIAL TEST (tent.)
3. Storage	
1-01.41	INVENTORY CLERK EQUIPMENT-INVENTORY CLERK (tent.)
(tent.)	RIVET SORTER RIVET-SERVICE MAN
(tent.)	SALVAGE SORTER
1-38.01	STOCK CLERK II KEY FLOORMAN, 1-38.04 ORDER FILLER, 9-65.43 OVERSTOCK CLERK (tent.) STOCK BOY, 9-65.43
1-38.05	TOOL CLERK DIE-STORAGE MAN (tent.) DISTRIBUTING CLERK (tent.) INSPECTION-RECORD CLERK TEMPLATE-STORAGE CLERK TOOL CHASER, 9-65.43
4. Traffic	
7-36.010	CHAUFFEUR II MOTORCYCLE DRIVER, DELIVERY, 7-35.200 TRUCK-DRIVER HEAVY, 7-36.250 TRUCK-DRIVER HELPER, 9-65.43

	TRUCK DRIVER, LIGHT, 7-36.260
(tent.)	DISPATCHER, TRUCK OPERATIONS
General	INSIDE TRUCK OPERATOR
	ELECTRIC-TRUCK OPERATOR, 7-88.410
	GASOLINE-DINKEY OPERATOR, 7-40.030
	TRACTOR OPERATOR, 7-36.510
	TRUCKER, HAND, 9-65.43
0-97.66	MANAGER, TRAFFIC
(tent.)	TRANSPORTATION CLERK II
	TOOL CHASER, 9-65.43

5. Shipping

6-39.114	BOX MAKER, WOOD III
	BOX MAKER, WOOD II, 9-03.01
1-34.13	SHIPPING CLERK I
	CHECKING-CLERK IV (tent.)
	DISPATCH CLERK II (tent.)
	LETTERER I, 5-27.910
	PACKER II, 9-65.43
	SHIPPING CHECKER I, 1-34.17
	SHIPPING CHECKER II
	SHIPPING CLERK III (tent.)
	SORTER, 9-65.43
	WEIGHER II, 1-45.01
	WRAPPER I, 9-65.43

APPENDIX

APPENDIX 1.- LIST OF OCCUPATIONS FOUND IN THE AIRFRAME INDUSTRY

Process Section

Number under the heading "Process Section" indicates the section in the preceding charts in which the occupation may be found.

Training Grades

Symbols are included to indicate the shortest possible estimated time required to train physically and mentally suited but untrained workers to reach normal production under normal circunstances. Symbols are interpreted as follows:

A: More than two years
B: One to two years
C: Six months to one year
D: Two to six months
E: Less than two months

Female

S indicates the occupation is suitable for the employment of female workers.
P indicates partially suitable.
U indicates unsuitable

Title	Process Section	Training Grade	Suitability for Women
Abrasive-Wheel-Friction-Sawing-Machine Operator	11	D	S
Accessory Installer (aircraft mfg.)	8	C	S
Accountant, Chief	16	A	S
Accountant, Cost	16	A	S
Accountant, General	16	A	S
Acetylene-Burner Operator	14	D	S
Acetylene Burner, Portable	14	D	P
Aerodynamist (aircraft mfg.) An Aeronautical Engineer	15	A	S
Aeronautical Engineer	15	A	S
Aileron Assembler A Subassembler II	9	C	S
Air-Brush Operator I	7	E	S
Air-Compressor Operator	14	D	S
Air-Maze Assembler A Subassembler III	4	C	S
Air-Pressure Tester	5, 13	E	S
Aircraft-Engine Installer	12	C	S
Aircraft-Engine Mechanic	12	B	P
Aircraft-Engine Mechanic Apprentice	12	B	P
Aircraft-Engine-Mechanic Foreman	12	A	U

Title	Process Section	Training Grade	Suitability for Women
Aircraft-Machine-Shop Apprentice (aircraft mfg.)	2	B	S
Aircraft Mechanic	12	A	U
Aircraft-Mechanic Helper	12	D	S
Aircraft-Sheet-Metal-Mechanic Apprentice (aircraft mfg.)	3	B	S
Aircraft-Subassembler Apprentice (aircraft mfg.)	4	B	S
Airplane Coverer	8	C	S
Airplane Designer			
An Aeronautical Engineer	15	A	P
Airplane-Heater Man (aircraft mfg.)			
A Subassembly Installer I	12	C	S
Airplane Inspector I	13	A	P
Airplane-Mechanic Apprentice II (aircraft mfg.)	3, 4, 12	B	S
Airplane Mechanic, Overhaul	12	A	U
Airplane Rigger I	12	C	P
Airplane Woodworker I	12	B	P
Airplane Woodworker II	10	C	S
Airplane-Woodworker Helper	10, 12	D	S
Airport Serviceman	12	D	P
Airship Inspector	13	A	P
Anglesmith	1	A	U
Annealer	6	C	U
Annealer, Torch			
A Laborer, Process	3	E	S
Anodic-Clamp Repairman	6	D	P
Anodic Operator	6	C	S
Anodic-Operator Helper (aircraft mfg.)	6	E	S
Arbor-Press Operator	2	D	S
Armament Inspector (aircraft mfg.)	13	C	P
Armament Installer I (aircraft mfg.)			
A Subassembly Installer I	12	C	P
Armament Installer II (aircraft mfg.)			
A Subassembly Installer I	12	C	P
Armament Mechanic (aircraft mfg.)	12	A	P
Armature Winder I	14	C	S
Armature Winder II	14	D	S
Armor-Plate Installer (aircraft mfg.)			
A Subassembly Installer II	12	C	P
Asbestos Worker, General	14	C	P
Assembly Planner (aircraft mfg.)	15	C	S
Assemblyman VIII			
A Major Assembler	9	B	S
Assemblyman IX			
A Subassembly Installer II	12	D	S
Assemblyman Helper II	9	D	S
Auditor	16	A	S

Title	Process Section	Training Grade	Suitability for Women
Back-Facing-Machine Operator (mach. shop)	2	D	S
Baffle Assembler	4	C	S
Band-Ripsaw Operator	10	D	S
Band-Sawing-Machine Operator	1, 3	D	S
Band-Scroll-Saw Operator	10	D	S
Bar-Tool-Grinding-Machine Operator	2	B	P
Barber-Coleman Operator	2	B	P
Batteryman II	12	C	U
Beam Man III	4	C	S
Belt Sander	10	D	S
Beltman I	14	E	S
Bench Assembler III	2	C	S
Bench-Assembly Inspector	2	C	S
Bench Assemblyman A Subassembler III	4	C	S
Bench-Assemblyman Helper A Laborer, Process	4	D	S
Bench Grinder	2	D	S
Bench Hand IX	14	B	P
Bench Repairman I	2	A	P
Bending-Machine Operator Helper, Pneumatic A Laborer, Process	3	D	S
Bending-Machine Operator, Pneumatic	3	C	S
Blacksmith II	1	A	U
Blacksmith Apprentice	1	E	U
Blacksmith Helper A Laborer, Process	1	D	U
Blueprinting-Machine Operator I	15	C	S
Blueprinting-Machine Operator II	15	D	S
Bolt-Threading-Machine Operator	2	C	S
Bookkeeper	16	B	S
Boring-Machine Operator, Automatic	2	E	S
Boring-Machine Operator, Horizontal	10	C	P
Boring-Machine Operator, Multiple Spindle	10	C	P
Boring-Machine Operator, **Vertical**	10	C	P
Boring-Mill Operator	2	A	P
Box Maker, Wood II A Laborer Process	17	E	S
Box Maker, Wood III	17	D	S
Brake Operator, Hand	3	D	S
Brake-Operator Helper, Machine (sheet metal) A Laborer, Process	3	E	S
Brake Operator, Machine II	3	B	S
Brinell-Hardness Tester	13	D	S
Briquette-Machine Operator A Laborer	2	E	S
Broacher, Hand	2	C	S
Broaching-Machine Operator	2	D	S
Broken-Arm-Drill-Press Operator (mach. shop)	2	D	S
Brush Hand I	7	D	S
Bucker-Up IV	9, 4	D	S

Title	Process Section	Training Grade	Suitability for Women
Buffalo-Rolls Operator	3	C	S
Buffer I	6	E	S
Bulkhead Man A Subassembler II	4	C	S
Bumper IV	3	B	P
Bumper Operator I	3	B	S
Bumper Operator Helper A Laborer, Process	3	D	U
Burnisher and Bumper	3	C	U
Burnisher, Hand	6, 3	D	S
Burnishing-Machine Operator	6	E	S
Burrer, Hand	11, 3, 5	E	S

Title	Process Section	Training Grade	Suitability for Women
Cabinet-Abrasive-Blast Man	6	D	S
Cabinetmaker (I) (woodworking)	10	B	P
Cable Splicer I	5	C	U
Cable Stretcher (aircraft mfg.)	5	D	S
Cable Swager	5	D	S
Cable-Swager Helper (aircraft mfg.)			
A Laborer, Process	5	E	S
Cadmium Plater	6	C	S
Calculating-Machine Operator	1, 16	C	S
Canopy Assembler	4, 5	C	S
Capper and Bander	4, 5	E	S
Car Unloader I			
A Laborer	14	E	U
Carburetor Man I	12	C	S
Carpenter, Maintenance	14	B	P
Casting Inspector	13	C	S
Cementer (aircraft mfg.)	5	D	S
Center-Section Assembler	10	C	S
Center-Section Assemblyman			
A Major Assembler	12	C	S
Centering-Machine Operator	2	E	S
Centerless-Grinder Operator	2	C	S
Centerless-Grinding-Machine Operator, Automatic			
A Laborer, Process	2	E	S
Channel-and-Bulkhead Man	4	C	S
Charwomen	14	E	S
Chauffeur II	14	E	S
Checker	13	C	S
Checker, Material Test (aircraft mfg.)	13, 17	D	S
Checking-Clerk IV (aircraft mfg.)	17	D	S
Chief Clerk I	16	B	S
Chucking-Machine Operator, Automatic	2	E	S
Circle-Shear Operator II	3	D	S
Circular-Ripsaw Operator	10	D	S
Circular-Sawing-Machine Operator	1, 3	D	S
Clay Modeler	1	A	S
Clean-Up Man VII			
A Subassembler II	9, 4	C	S
Clean-Up Man VIII			
A Major-Assembly Installer	12	B	S
Cleaner (electroplating)	6	E	U
Cleaner (mach. shop)			
A Laborer	2	E	S
Clerk, General	16	D	S
Clerk, General Office	16	D	S
Cockpit-Cowl Assembler	4	C	S
Cockpit-Cowl-Skin Man	4	C	S
Cockpit-Cowl-Trim Man			
A Subassembly-Installer II	8, 12	C	S
Colburn-Drill-Press Operator	2	D	S
Color Tabber; color bander (aircraft mfg.)			
A Laborer Process	5	E	S
Contract-Checking Clerk (aircraft mfg.)	15	D	S

Title	Process Section	Training Grade	Suitability for Women
Control-Cable Inspector	13	C	S
Control-Surface Assembly Man (aircraft mfg.)	9	C	S
Control-Surface Coverer	8	C	S
Controller	16	A	S
Controls Assembly Man (aircraft mfg.) A Subassembler II	4, 5	C	S
Conveyor Man II	14	C	U
Corrugation Assembler (aircraft mfg.) A Subassembler II	4	C	P
Corrugation Installer (aircraft mfg.) A Subassembly Installer I	9, 12	C	S
Cost Clerk II	16	C	S
Countersink Operator	2	E	S
Cowling-Installation Assembler A Subassembler III	4, 12	C	S
Cowlman I	3, 12	C	S
Cowlman II	3, 12	C	S
Crane Follower	14	E	U
Crowning-Hammer Operator	3	B	U
Crowning-Machine Operator	3	C	U
Cut-Off-Saw Operator, Treadle-Operated	10	E	S
Cut-Off-Saw Set-Up Man (aircraft mfg.)	3	C	P
Cutter, Hand III	8	C	S
Cutter, Hand XV (aircraft mfg.)	8	D	S
Cutter, Machine I	8	C	S
Cylindrical-Grinder Operator I	2	B	S
Cylindrical-Grinder Operator II	2	D	S

Title	Process Section	Training Grade	Suitability for Women
Decal Applier	7	E	S
Degreaser	6	D	S
Detail Assembler I	4	D	S
Detail Assembler II	5	C	S
Detail Electrical Assembler	5	C	S
Detailer II	15	B	S
Development Planner (aircraft mfg.)	15	A	P
Die Cleaner and Polisher	1	B	U
Die Designer	15	A	P
Die Finisher	1	A	P
Die Finisher Helper			
A Laborer, Process	1	D	U
Die-Increment Analyst (aircraft mfg.)	15	B	S
Die Maker II	1	A	P
Die-Maker Apprentice I	1	D	P
Die Setter I	3	A	U
Die Setter, Drop Hammer	3	A	U
Die-Setter Helper			
A Laborer, Process	3	D	U
Die-Setter, Punch Press	3	B	U
Die-Storage Man (clerical)	17	D	P
Die-Try-Out Man	1	A	P
Dimpler	4	C	S
Dimpling-Machine Operator	4	E	S
Dipper II	7	E	S
Director, Educational	16	A	S
Disassembler			
A Major-Assembly Installer	12	C	S
Disk-Grinder Operator	1, 2	E	S
Dispatch Clerk II (aircraft mfg.)	17	D	P
Dispatcher, Maintenance Service (aircraft mfg.)	14	D	S
Dispatcher, Truck Operations (clerical)	17	C	S
Distributing Clerk (aircraft mfg.)	17	D	S
Distributor I	17	E	S
Do-All-Saw Operator	1	D	S
Door Assembly Man (aircraft mfg.)			
A Subassembler II	4	C	P
Door Fitter (aircraft mfg.)			
A Subassembly Installer II	12	C	S
Doorframe Assembler II			
A Subassembler II	4	C	S
Doper I	7	D	S
Double-Cut-Off-Saw Operator	10	E	S
Draftsman, Aeronautical	15	C	S
Draftsman Construction	14	B	S
Draftsman, Detail	15	B	S
Draftsman, Electrical	14	B	S
Draftsman, Heating and Ventilating	14	B	S
Draftsman, Mechanical	15	B	S
Draftsman, Plumbing	14	B	S
Draftsman, Structural	14	B	S

Title	Process Section	Training Grade	Suitability for Women
Draw Bench Operator II	3	C	S
Draw-Bench-Operator Helper (aircraft mfg.)	3	E	S
Draw-Bench-Straightener Operator (any ind.)	3	D	P
Draw-Shaper Operator (mach. shop)	2	B	P
Drill Operator, Automatic	2	E	S
Drill Press Operator VII			
A Laborer, Process	10	D	S
Drill Sharpener II (mach. shop)	1	C	P
Driller, Hand III (any ind.)			
A Laborer, Process	2, 3	D	S
Drilling-and-Tapping-Machine Operator	2	D	S
Drop-Hammer Operator IV	3	B	U
Drop-Hammer Operator, Head (forging)	3	A	U
Drop-Hammer-Operator Helper			
A Laborer, Process	3	D	S
Dural Heat Treater	6	B	S
Dural Mechanic	3	B	P

Title	Process Section	Training Section	Suitability for Women
Ecro-Former Operator (aircraft mfg.)	3	C	U
Edger Man I (mach. shop)	1	A	P
Electric-Bridge-Crane Operator	14	C	S
Electric-Conduit Installer A Subassembly Installer II	12	C	S
Electric-Gantry-Crane Operator	14	C	S
Electric-Monorail-Crane Operator	14	C	S
Electric-Motor Repairman	14	B	U
Electric-Truck Operator	14	E	S
Electrical Engineer	14	A	P
Electrical-Equipment Tester (aircraft mfg.)	5	B	S
Electrical Inspector II	13	B	S
Electrical Repairman	14	A	P
Electrical-Test Inspector (aircraft mfg.)	13	C	P
Electrician	14	A	P
Electrician, Aircraft Radio	12	B	S
Electrician, Airplane	5, 12	B	P
Electrician, Chief I	14	A	U
Electrician, Field Service	12	B	S
Electrician Helper I A Laborer	14	E	S
Electrician Helper, Airplane A Laborer, Process	5, 12	D	S
Electrician, Radio I	12	B	S
Electrician, Wing	12	B	S
Elevator Assembler A Subassembler II	9	C	S
Elevator Operator, Freight	14	E	S
Elevator Operator, Passenger	14	E	S
Employment Interviewer	16	B	S
Enclosure Installer (aircraft mfg.) A Subassembly Installer I	12	C	P
Ends Assembler A Detail Assembler I	4	C	S
Engine-and-Hydraulic Inspector (aircraft mfg.)	13	B	P
Engine-Control Installer (aircraft mfg.) A Subassembly Installer I	12	C	S
Engine-Control Installer, Fuselage Installations (aircraft mfg.) A Subassembly Installer I	12	C	S
Engine-Control Installer, Wing Installations (aircraft mfg.) A Subassembly Installer I	12	C	S
Engine-Cowling-and-Nacelle-Door Installer (aircraft mfg.) A Subassembly Installer II	12	C	P
Engine-Installation Assembler A Major-Assembly Installer	12	C	S
Engine-Installation-Assembler Helper A Laborer Process	12	D	S
Engine-Lathe Operator I	2	B	S

Title	Process Section	Training Grade	Suitability for Women
Engine-Lathe Operator II	2	D	S
Engine Man	12	B	S
Engine-Mount-and-Cowling Assembler	4	C	S
Engine Preparer A Major-Assembly Installer	12	C	S
Engine Tester	12	A	P
Engineering Checker (aircraft mfg.)	15	A	P
Engineering Clerk	15	C	S
Engineering-Liaison Man (aircraft mfg.)	15	A	P
Engraving-Machine Operator	3	D	S
Equipment Inspector (aircraft mfg.)	13	B	P
Equipment-Inventory Clerk (aircraft mfg.)	17	D	S
Erco-Machine Operator	4	D	S
Estimator IV	16	A	S
Etcher II A Laborer, Process	4	E	P
Exhaust-Stack Installer (aircraft mfg.) A Subassembly Installer I	12	C	U
Experimental-Body-and-Minor Assembler (aircraft mfg.)	15	A	U
External-Cylindrical-Grinder Operator (mach. shop.)	2	D	S
External-Grinder Operator I (auto. mfg.)	2	D	S
External Grinder, Tool (mach. shop)	2	D	S
Extrusion Former	3	C	S

Title	Process Section	Training Grade	Suitability for Women
Fabric Worker I	8	C	S
Fabric Worker Foreman (aircraft mfg.)	8	B	P
Factory Lay Out-Man	14	A	P
Fairing Installer (aircraft mfg.) A Subassembly Installer II	12	C	S
Fairing-Installer Helper (aircraft mfg.) A Laborer, Process	12	E	S
Fairing Man II	3	B	S
Farnham-Roller Operator	3	C	S
Ferry Pilot (aircraft mfg.)	12	B	S
Fibre Worker (aircraft mfg.)	2, 5	B	S
Filer VII (aircraft mfg.) Burr Man A Laborer, Process	5	E	S
Filler-and-Water Sander	7	E	S
Fin Assembler	10	C	S
Final Assembler I A Major-Assembly Installer	12	C	S
Final Assembler IV A Subassembly Installer II	12	C	S
Final-Assembler Helper A Laborer, Process	12	D	S
Final Assembly Apprentice (aircraft mfg.)	12	C	S
Final-Assembly Inspector	13	B	S
Final-Assembly Inspector, Engine Installation (aircraft mfg.)	13	B	S
Final-Tank Inspector (aircraft mfg.)	13	B	P
Final Pick-Up Man, Electrical (aircraft mfg.)	12	B	P
Finisher, Hand XII (aircraft mfg.) Metal finisher. A Laborer, Process	3	D	P
Finishing-Lathe Operator	2	B	P
Fire-Wall Assembler	4	C	S
Fireman, Stationary Boiler	14	D	U
First-Part Inspector, Machine Shop (aircraft mfg.)	13	B	P
Fitter XV A Subassembly Installer II	5, 11, 12	C	S
Fitting Man A Subassembler III	4, 5, 11	B	S
Fitting-Man Helper A Laborer, Process	4, 5, 11	D	S
Fitting-Shield-and-Bracket Installer	12	C	S
Fixed-Bed-Milling-Machine Operator	2	B	P
Fixed-Flight Surface Installer (aircraft mfg.) A Major Assembly Installer	12	C	P
Fixture Maker	1	A	P
Flanger IV	3	C	S
Flanger Helper A Laborer Process	3	E	S
Flanging-Machine Operator IV	3	C	S
Flap Assembler A Subassembler II	9	C	S
Flight Analyst (aircraft mfg.) An Aeronautical Engineer	15	A	S
Flight-and-Engine-Control Rigger (aircraft mfg.)	12	C	P
Flight-Control Inspector (aircraft mfg.)	13	B	P
Floor Assembler	2	C	S
Floor-Board Assembler II	4	C	S
Folding-Machine Operator VII	3	E	S

Title	Process Section	Training Grade	Suitability for Women
Foot-Milling-Machine Operator (aircraft mfg.)	2	B	S
Foot-Press Operator I A Laborer, Process	3	E	S
Foreman	2, 10	A	P
Foreman (Heat Treat.)	6	A	S
Foreman (aircraft mgr.)	9, 5, 11,12	A	P
Foreman (electroplating)	6	A	U
Foreman	2	A	P
Form-Block Lay-Out Man	1	B	S
Form Builder I	1	A	P
Form-Builder Helper A Laborer, Process	1	D	P
Formed-Work Lay-Out Man A Laborer, Process	3	D	S
Forming-Machine Operator IV	3	C	S
Forming Press Operator II	3	B	U
Forming-Press Operator, Automatic	2, 3	E	S
Forming-Press Operator Helper A Laborer Process	3	D	S
Framer, Body Minors; pre-assembler (aircraft mfg.) A Subassembler III	9	C	P
Friction-Sawing-Machine Operator	5, 11	D	S
Fuel and Oil Units Assembler	5	B	P
Fuel-System Installer A Major-Assembly Installer	12	C	S
Fuel-System Tester (aircraft mfg.)	12	C	P
Furnace Tender, Heat Treating	6	C	U
Fuselage Assemblyman A Major Assembler	9	C	S
Fuselage Assemblyman (II) (aircraft mfg.) equipment installer. A Subassembly Installer I.	12	C	S
Fuselage Coverer	8	C	S
Fuselage-Frame Builder A Subassembler III	11	C	S

Title	Process Section	Training Grade	Suitability for Women
Gage Grinder (mach. shop)	1	B	P
Gage Inspector;gage man	13	A	P
Gage Maker	1	A	P
Gager I (mach. shop) small-parts inspector	13	D	S
Gang-Nut Installer (aircraft mfg.) A Subassembly Installer II	12	D	S
Gang-Nut-Installer Helper (aircraft mfg.) A Laborer, Process	12	D	S
Gasoline Dinkey Operator	14	E	S
General-Aircraft Assembler II A Major Assembler	9, 12	B	S
General-Aircraft Assembler III A Subassembly Installer II	12	C	S
General Tool Planner (aircraft mfg.)	15	A	P
Gisholt-Lathe Operator	2	D	S
Glass Cutter	5	D	S
Gleason-Indicator Operator (auto. mfg.)	13	A	P
Glue Mixer	10	D	S
Glueman III	10	D	S
Glueman, Assembly A Subassembler	10	D	S
Grader VIII	10	C	S
Gravity-Feed-Hacksawing-Machine A Laborer Process	1	E	S
Grinder (auto. mfg.)	2	D	S
Grommet-Machine Operator A Laborer, Process	8	D	S
Grounds Keeper I	14	D	S
Group Leader III	1-12	B	P
Guide, Factory	16	C	S
Gun-and-Turret Reworker (aircraft mfg.)	5	B	P

Title	Process Section	Training Grade	Suitability for Women
Hacksawing-Machine Operator A Laborer, Process	1, 3	E	S
Hand Driller and Trimmer A Laborer, Process	3, 4	D	S
Hardener II	6	B	P
Hardness Inspector	13	C	S
Heat Treater II	6	B	P
Heat Treater III	6	B	P
Heat-Treater Helper I	6	E	S
Heat-Treater Helper II	6	D	S
Heat-and-Vent Installer (aircraft mfg.) A Subassembly Installer II	12	C	S
Heating-and-Ventilating-Installation Assembler A Subassembly Installer I	12	C	S
High-Speed-Friction-Drill-Press Operator	2	D	S
Horizontal-Boring-and-Milling-Machine Operator	2	B	P
Horizontal-Boring-Mill Operator (Mach. shop)	2	B	P
Horizontal-Broaching-Machine Operator (mach. shop)	2	D	S
Horizontal-Drill-Press Operator	2	D	S
Horizontal-Milling-Machine Operator	2	B	P
Horizontal-Shaper Operator	2	B	P
Hy-Cycle-Mill Operator (aircraft mfg.)	2	B	S
Hydraulic-Control Unit Assembler	5	B	P
Hydraulic-Feed-Drill Operator	2	D	S
Hydraulic-Feed-Hacksawing-Machine Operator A Laborer, Process	1	E	S
Hydraulic-Field-Service Mechanic	12	C	S
Hydraulic-Planer Operator (mach. shop)	2	B	P
Hydraulic-Strut Assembler	5	C	P
Hydraulic-System Checker A Major-Assembly Installer	12	C	S
Hydraulic Tester II	13	C	P
Hydraulics-and-Fuel-System Assembler (aircraft mfg.) A Subassembly Installer II	12	C	S
Hydro-Press Checker	3	C	P
Hydro-Press Operator	3	C	S
Hydro-Press-Operator Helper A Laborer, Process	3	E	P
Hydro-Press Table Loader A Laborer, Process	3	E	U

Title	Process Section	Training Grade	Suitability for Women
Inboard-Wing Assemblyman (aircraft mfg.)			
A Subassembly Installer II	12	C	P
Industrial Engineer	16	A	S
Inspection-Record Clerk (aircraft mfg.)	17	D	S
Inspector	13	B	P
Inspector	13	C	S
Inspector, Hammers and Presses (aircraft mfg.)	13	C	P
Inspector, Structural Assembly (aircraft mfg.)	13	B	S
Installation Engineer			
A Mechanical Engineer	14	A	P
Installation Mechanic			
A Subassembly Installer I	12	C	S
Installation-Mechanic Helper			
A Laborer, Process	12	D	S
Instrument Inspector	13	B	S
Instrument Man IV	12	B	S
Instrument-Man Helper			
A Laborer, Process	12	D	S
Instrument-Panel Assembler	5	C	S
Internal-Broaching-Machine Operator	21	D	S
Internal-Grinder Operator I	2	B	P
Internal-Grinder Operator II	2	D	S

Title	Process Section	Training Grade	Suitability for Women
Janitor	14	E	S
Jig-Boring-Machine Operator	1	B	P
Jig Inspector	13	A	S
Jig Maker II	1	A	P
Jigsaw Operator I	10	E	S
Jigsaw Operator II	3	D	S
Jigsaw Operator IV	3	D	S
Jig-Set-Up Man (aircraft mfg.)	4, 5, 11	C	P
Job Analyst	16	A	S
Job Setter II	2	A	P
Joggle-Press Operator I	3	B	P
Jointer Operator III	10	C	P
Jones-and-Lamson-Lathe Operator	2	B	P

Title	Process Section	Training Grade	Suitability for Women
Keller-Machine Operator (auto.mfg.)	1, 2	A	P
Key Floorman	17	C	S
Kick-Press Operator II	3	D	S
Kick-Press Operator IV	3	D	S
Knuckle Bender (aircraft mfg.)	5	C	U
Knuckle-Bender Helper (aircraft mfg.)	5	D	U
A Laborer, Process			

Title	Process Section	Training Grade	Suitability for Women
Laborer	6	E	P
Laborer	10	E	P
Laborer	6	E	P
Laborer	all	E	S
Laborer	2	E	S
Laborer, Process	10	E	P
Laborer, Process (electroplating)	6	E	S
Laborer, Process (heat treat.)	6	E	S
Laborer, Process	8	E	S
Landing-Gear-and-Door Installer (aircraft mfg.) A Subassembly Installer II	12	C	P
Landing-Gear Assembler	5	C	P
Landing-Gear Assembler Helper	5	D	P
Landing-Wheel Installer and Functional Tester (aircraft mfg.)	12	C	P
Lapping-Machine Operator	2	D	S
Lathe Hand, Automatic	1	C	P
Lathe Operator, Automatic I (auto. mfg.)	2	D	S
Lay-Out Man	1, 10	B	P
Lay-Out Man	1	A	S
Lay-Out Man	3	C	P
Lay-Up Man I A Laborer, Process	8	E	S
Lead Molder	1	C	U
Lead-Plate Man	1	C	U
Letterer I	17	D	S
Liaison Planner (aircraft mfg.)	15	A	P
Libby-Lathe Operator	2	B	P
Libert-Shear Operator	3	D	S
Line Feeder	17	E	S
Loftsman III	1	A	P
Lug-Milling-Machine Operator (aircraft mfg.)	2	B	S
Lugger (aircraft mfg.)	5	E	S
Lumber Handler A Laborer	10	E	U
Lumber Inspector I	13	B	S

Title	Process Section	Training Grade	Suitability for Women
Machine-Set-Up Man IV	10	B	P
Machine-Shop-Load Estimator	15	A	P
Machined-Parts Inspector	13	C	S
Machinery and Tool Designer			
A Mechanical Engineer.	15	A	P
Machinist II	2	A	P
Machinist Apprentice	2	E	S
Machinist, Bench	2	A	P
Machinist, Floor	2	A	P
Machinist Helper			
A Laborer, Process	2	E	S
Machinist, Maintenance	14	A	P
Magnaflux Inspector	13	D	S
Magnaflux Operator	13	D	S
Magnetic-Inspector	13	D	S
Maintenance Man, Factory or Mill	14	A	P
Maintenance Mechanic II	14	A	P
Maintenance Mechanic Helper			
A Laborer	14	D	P
Major Assembler (aircraft mfg.)	9	B	S
Major-Assembly Installer	12	B	P
Manager, Employment	16	A	S
Manager, Industrial Organization	16	A	P
Manager, Office I	16	A	S
Manager, Personnel	16	A	S
Manager, Production I	16	A	P
Manager, Traffic	16	B	P
Masker			
A Laborer, Process	7	E	S
Master Mechanic, Maintenance	14	A	U
Material Cutter (aircraft mfg.)	3	D	P
Material-Release Man (aircraft mfg.)	3	C	S
Material-Test Clerk (aircraft mfg.)			
A Laborer	13	D	S
Material Weigher	3	E	P
Material Wrapper			
A Laborer	3	E	S
Mechanical Engineer	15	A	S
Mechanical Engineer, Junior	15	A	S
Metal-Fittings Inspector	13	C	S
Metal-Stamping Inspector	13	D	S
Metallurgist II	15	A	S
Metallurgist III (aircraft mfg.)	6	B	P
Micrometer Inspector	13	E	S
Milling-Machine Operator II	2	B	P
Milling-Machine Operator, Automatic	2	E	S
Milling-Machine Operator Hand	2	B	P
Milling-Machine Operator, Portable			
(mach. shop.)	2	B	S
Millman	10	A	P
Millman Apprentice	10	A	P

Title	Process Section	Training Grade	Suitability for Women
Millman Helper II	10	E	P
Millwright	14	A	U
Millwright Helper A Laborer	14	E	P
Miscellaneous-Equipment Tester (aircraft mfg.)	13	C	P
Mock-Up Assembler	1	A	P
Model Maker IV	1	B	S
Model Maker V	1	B	S
Molder Apprentice	1	D	U
Molder Bench I	1	B	P
Molder, Floor	1	A	U
Molder Helper III	1	E	U
Molder Operator III	10	C	P
Motorcycle Driver, Delivery	14	E	S
Motor-Mount Mechanic (aircraft mfg.) A Subassembler III	5	C	P
Multiple-Spindle-Drill-Press Operator	2	D	S

Title	Process Section	Training Grade	Suitability for Women
Nacelle Assemblyman			
Nacelle Man (aircraft mfg.)			
A Subassembly Installer I	12	C	P
Nacelle Installer (aircraft mfg.)			
A Subassembly Installer I	12	C	P
Nailing-Machine Operator I	10	D	S
Nibbling-Machine Operator	1, 2, 3	D	S
Normalizer	6	B	S
Number Stamper			
A Laborer, Process	4	E	S

Title	Process Section	Training Grade	Suitability for Women
Off-Set-Press Operator			
gear-press operator (aircraft mfg.)	3	C	P
Oil Extractor			
A Laborer	2	E	S
Oiler I	14	E	S
Oiler II	14	D	S
Oiler and Greaser			
A Laborer, Process	6	E	P
Okite Cleaner			
A Laborer, Process	7	E	S
Oleo Assembler			
A Detail Assembler I	4	D	P
Open-Side-Planer Operator (mach. shop)	2	B	P
Order Detailer	16	D	S
Order Filler			
A Laborer	17	E	S
Outboard-Wing Assembler (aircraft mfg.)			
A Subassembly Installer I	12	C	P
Overstock Clerk (aircraft mfg.)	17	D	S
Oxygen-System Tester (aircraft mfg.)	12	C	S

Title	Process Section	Training Grade	Suitability for Women
Packer II	17	E	S
Paint Boy	7	E	S
Paint-Dope-and-Covering Inspector	13	C	S
Paint Inspector III	13	B	S
Paint-Spray Inspector	13	C	S
Paint Stockman	7	D	S
Paint-Touch-Up Man	7	C	S
Painter, Dip	7	E	S
Painter Helper	7	E	S
Painter Helper II	7	D	S
Painter Helper, Insignia A Laborer, Process	7	D	S
Painter Helper, Spray	7	E	S
Painter, Insignia	7	C	S
Painter, Maintenance	14	C	P
Painter, Sign	7	B	P
Painter, Spray I	7	C	S
Pantograph Operator II	1	C	P
Parts Fitter II	5, 11	B	P
Parts Numberer parts-numbering boy (aircraft mfg.) A Laborer, Process	2, 3, 4, 5	E	S
Parts-Numberer-and-Rework Man (aircraft mfg.) A Laborer, Process	4, 5	E	S
Parts Trimmer (aircraft mfg.)	3	D	S
Parts Wirer A Laborer, Process	6	E	S
Pattern-and-Foundry Inspector I	13	B	S
Pattern Lay-Out Man	1	A	S
Patternmaker XI	1	A	S
Patternmaker Apprentice, Wood	1	E	S
Patternmaker, Plaster II	1	B	S
Patternmaker, Wood	1	A	P
Payroll Clerk I	16	D	S
Personnel Clerk	16	D	S
Photo-Template Maker (aircraft mfg.)	1	B	S
Pickling Operator	6	D	U
Pin-Router Operator	3	C	P
Pipe-Fitter Apprentice	14	A	P
Pipe-Fitter Foreman	14	A	U
Pipe-Fitter Helper	14	E	P
Pipe Fitter, Maintenance	14	A	P
Pipe-Threading-Machine Operator	14	C	P
Plain-Milling-Machine Operator	2	B	P
Planer Operator II	2	B	P
Planer Operator IV	10	C	P
Planer-Type-Milling Machine Operator	2	C	P
Planning Statistician (aircraft mfg.)	15	A	P
Plant Engineer A Mechanical Engineer	14	A	P
Plaster-Pattern Caster	1	C	S
Plater I	6	A	P
Plater Foreman	6	A	U
Plater Helper	6	E	P
Plexiglas Former	5	C	P

Title	Process Section	Training Grade	Suitability for Women
Plumber, Aircraft			
A Subassembly Installer I	12	B	P
Plumber, Final Assembly			
A Major-Assembly Installer(aircraft mfg.)	12	C	P
Plumber Helper, Aircraft	12	D	S
Plumber, Wing Installations			
A Subassembly Installer I (aircraft mfg.)	12	C	P
Pneumatic-Tool Repairman			
A Maintenance Mechanic II	1	A	P
Polisher II	6	D	S
Polisher, Belt	6	E	S
Porter II	14	E	S
Positive-Feed-Hacksawing-Machine Operator			
A Laborer, Process	1	E	S
Power-Brake Operator III	3	B	S
Power-House Engineer	14	A	P
Power-House Oiler	14	D	S
Power-Roll Operator			
A Laborer, Process	3	E	S
Power-Rolls-Operator Helper (aircraft mfg.)			
A Laborer, Process	3	E	S
Power-Shear Operator I	1	D	S
Power-Shear-Operator Helper			
A Laborer, Or a Laborer, Process	1	E	S
Precision-Lathe Operator	2	A	U
President	16	A	S
Press Operator (aircraft manufacturing)			
Primer Sprayer	7	C	S
Process Planner	15	A	P
Production Clerk II	16	C	S
Production Planner, Experimental (aircraft mfg.)	15	A	P
Production Planner	15	A	P
Profiling-Machine Operator I	2	B	P
Profiling-Machine Operator II	2	C	S
Profiling-Machine Operator III	2	C	U
Profiling-Machine-Operator Helper			
A Laborer, Process	2	D	U
Propeller-Installation Assembler			
A Subassembly Installer I	12	C	P
Public-Relations Man	16	A	S
Punch-Press Operator I	2	D	S
Punch-Press Operator Automatic	2, 3	E	S
Punch-Press Operator, Hand	2, 3	E	S
Punch-Press Operator Helper			
A Laborer, Process	2, 3	E	S
Punch-Press Set-Up Man (aircraft mfg.)	2, 3	C	P
Purchasing Agent	16	A	P

Title	Process Section	Training Grade	Suitability for Women
Rack Loader II			
A Laborer, Process	6	E	S
Racker V	6	E	S
Radial-Drill-and-Router-Table Loader	3	D	U
Radial-Drill Operator III	3	D	S
Radial-Drill-Press Operator	2	D	S
Radial-Router Operator	3	C	P
Radial-Router-Operator Helper			
A Laborer, Process	3	E	P
Radio-and-Electrical Inspector	13	B	S
Radio Mechanic II	12	B	S
Radio Mechanic, Ground Installations	12	B	S
Radio Operator	12	C	S
Radio Repairman I	12	B	S
Raw-Stock-Saw Operator (mach. shop)	2, 3	D	S
Reamer IV (aircraft mfg.)			
A Detail Assembler I	4, 5, 9	C	S
Reamer Helper (aircraft mfg.)			
A Laborer, Process	4, 5, 9	E	S
Reamer, Machine	2	D	S
Rear-Deck Assembler			
A Subassembler II	4	C	S
Receiving Checker II	13	C	S
Receiving Inspector (aircraft mfg.)	13, 17	C	S
Receptionist II	16	C	S
Rejected-Parts Checker and Template Maker (aircraft mfg.)	5	B	P
Research Analyst (aircraft mfg.)			
An Aeronautical Engineer	15	A	S
Research-and-Static-Test Mechanic (aircraft mfg.)	15	B	P
Rework Inspector (aircraft mfg.)	13	A	P
Rib Assembler			
A Detail Assembler I	4	C	S
Rib Builder	10	C	S
Rib-Frame Builder			
A Detail Assembler I	4	C	S
Rib Stitcher	8	C	S
Riddler			
A Laborer, Process	2	E	S
Rigger V			
A Laborer	14	E	U
Rigger IX			
A Major-Assembly Installer	12	C	S
Rigger--(X) (aircraft mfg.)	12	C	P
Rigger Helper III			
A Laborer, Process	12	D	P
Rivet Heat-Treater	6	D	S
Rivet Inspector II	13	C	S
Rivet-Machine Operator	2	D	S
Rivet Service Man (aircraft mfg.)			
A Laborer, Process	17	E	S
Rivet Sorter (aircraft mfg.)			
A Laborer, Process	17	D	S

Title	Process Section	Training Grade	Suitability for Women
Rivet Spinner	4	C	S
Rivet Squeezer (aircraft mfg.)	4, 9	D	S
Riveter, Aircraft	9, 4	C	S
Riveter, Angle	4	D	S
Riveter, Hand IV	9, 4	C	S
Riveter Helper, Aircraft			
A Laborer, Process	9, 4	D	S
Riveter, Pneumatic III	9, 4	D	S
Riveter, Rib	4	D	S
Riveter, Shell	4	D	S
Riveting-Machine Operator IV	4	D	S
Riveting-Machine-Operator Helper	4	E	S
Riveting-Tool Grinder	2	C	S
Rockwell Hardness--Tester	13	D	S
Rolling-Machine Operator IX (aircraft mfg.)	5	C	P
Rotary-Shear Operator II	3	D	S
Rotary-Surface-Grinder Operator	2	D	S
Router Operator I	10	B	P
Router Operator III	3	C	P
Router Operator, Portable	3	C	S
Routerman, Hand	3	D	S
Rudder Assembler			
A Subassembler II	9	C	S
Rubber-Tank-Lining Installer (aircraft mfg.)	3	C	S
A Subassembly Installer			
Rubber-Tex Installer (aircraft mfg.)			
A Laborer, Process	12	D	S
Rubber-Tex-Installer Helper (aircraft mfg.)			
A Laborer, Process	12	E	S

Title	Process Section	Training Grade	Suitability for Women
Sales Engineer	16	A	S
Salvage Engineer	15	A	P
Salvage Inspector II (aircraft mfg.)	13	A	P
Salvage Sorter (aircraft mfg.)	17	D	U
Sander I			
A Laborer, Process	7	E	S
Sander, Fabric			
A Laborer, Process	7	E	S
Sandblast-Room Operator	6	D	U
Sandblaster I	6, 11	D	U
Sandblaster Helper	6	E	U
Saw Filer, Hand	10	C	S
Saw Filer Helper, Machine	10	E	S
Saw Filer, Machine	10	D	S
Saw Operator (aircraft mfg.)			
Sawdust Drier	6	E	S
Scleroscope Hardness-Tester	13	D	S
Scrap Wheeler II			
A Laborer	2	E	U
Screw-Cutting-Lathe Operator	2	B	P
Screw Driver			
A Laborer, Process	4	E	S
Screw-Machine Operator	2	B	P
Screw-Machine Operator Automatic			
A Laborer, Process	2	E	S
Screw-Machine Operator, Semi-Automatic	2	D	S
Screw-Machine-Set-Up Man, Automatic	2	A	P
Seat-and-Carpet-Installation Assembler			
A Subassembly Installer II	8, 12	C	S
Secretary, Administrative	16	A	S
Sensitive-Feed Drill-Press Operator	2	D	S
Service-and-Flight Inspector (aircraft mfg.)	13	A	P
Sewer Hand I	8	D	S
Sewer, Hand XVI	8	C	S
Sewing-Machine Operator	8	C	S
Sewing-Machine Operator, Double Needle	8	C	S
Sewing-Machine Operator, Four Needle	8	C	S
Sewing-Machine Operator, Multiple Needle	8	C	S
Sewing-Machine Operator, Single Needle	8	D	S
Shaper-Form Maker	1	A	P
Shaper Operator I	2	B	P
Shaper Operator II	10	C	P
Shaper-Operator Helper			
A Laborer, Process	2	E	P
Shear Operator (aircraft industry)			
Shear Operator, Hand			
A Laborer or a Laborer, Process	3	E	S
Shear-Plate Installer (aircraft mfg.)			
A Subassembly Installer II	12	C	S
Shearman, Head			
A Foreman	3	C	P

Title	Process Section	Training Grade	Suitability for Women
Sheet-Metal Assembler			
A Subassembly Installer II	12	C	S
Sheet-Metal Assembler II (aircraft mfg.)			
bench mechanic			
A Subassembler III	12	C	P
Sheet-Metal Bundler	3	E	U
Sheet-Metal-Culls-Racker			
A Laborer	3	E	U
Sheet-Metal-Fabricating-Machine Operator	3	C	S
Sheet-Metal Foreman	3, 4	B	P
Sheet-Metal Inspector I	13	B	S
Sheet-Metal Inspector II	13	B	S
Sheet-Metal Lay-Out Man I	3	A	P
Sheet-Metal Lay-Out Man II	3	C	P
Sheet Metal Oiler			
A Laborer, Process	3	E	S
Sheet-Metal Rolling Machine Operator			
A Laborer, Process	3	E	S
Sheet-Metal Worker II	14	A	P
Sheet-Metal Worker, Aircraft I	3, 4	B	P
Sheet-Metal Worker, Aircraft II	4	A	P
Sheet-Metal-Worker Apprentice	14	A	P
Sheet-Metal-Worker Helper	14	E	P
Sheet Metal Worker Helper, Aircraft	3, 4	E	S
Sheet-Steel Inspector	13	C	S
Shell Fitter			
A Subassembler II	44	C	P
Shield Assembler (aircraft mfg.)	5	C	S
Shield-and-Conduit Installer (aircraft mfg.)			
A Subassembly Installer II	12	C	S
Shield Installer (aircraft mfg.)	5	D	S
Shielding Installer (aircraft mfg.)			
A Subassembly Installer II	12	C	P
Shipping Checker	13	C	S
Shipping Checker II	13	C	P
Shipping Clerk I	17	D	S
Shipping Clerk III (aircraft mfg.)	17	D	S
Shipping Inspector I	13	C	S
Shipping Inspector II	13	D	S
Shop Clerk	2, 6, 7 13, 10, 17	D	S
Shop Clerk, Chief (clerical)	16, 17	B	S
Shrinking-Machine Operator II	3	D	S
Shroudman II (aircraft mfg.)			
shroud assembler			
A Detail Assembler II	12	C	S
Side-Frame Builder			
A Subassembler III	11	C	S
Single-Spindle Drill Press Operator	2, 3	D	S
Skeleton Assembler I			
A Subassembler III	11, 4, 9	C	S

Title	Process Section	Training Grade	Suitability for Women
Skeleton Assembler II			
A Detail Assembler I	4	C	S
Skeleton-Assembler Helper			
A Laborer, Process	11, 4, 9	E	S
Skin Man			
A Major Assembler	9, 12	C	S
Small-Parts Assembler III			
A Subassembler II	9, 4	D	S
Small Parts Assembler, IV	4, 5	C	S
Snipper, Sheet Metal			
A Laborer, Process	3	E	S
Soft-Tubing Bender (aircraft mfg.)	5	D	S
Solderer I	5	D	S
Solderer, Small Parts	5	D	S
Sorter			
A Laborer	17	E	S
Soundproofing Cutter	8	D	S
Soundproofing-Installation Assembler			
A Subassembly Installer II	8, 12	D	S
Spar Builder I			
A Subassembler II	9, 4	C	S
Spar Builder II	10	C	S
Spar-Cap-Mill Operator	2	C	S
Spar-Cap Sander			
spar-cap finisher (aircraft mfg.)	5	D	S
Spar Finisher	10	C	S
Spark-Plug Tester (aircraft mfg.)	12	C	S
Special-Assignments Inspector (aircraft mfg.)			
An Aeronautical Engineer	13	A	P
Specification Writer, Engineering	15	A	S
Spinner IV	3	A	U
Spooling-Machine Operator	5	E	S
Spray-Booth Cleaner			
A Laborer	7	E	P
Spray Man I	7	C	S
Spray Man II	7	C	S
Sprayer Helper IV			
A Laborer, Process	7	E	S
Spring-Tension-Feed-Hacksawing-Machine Operator			
A Laborer, Process	1	E	S
Square-Shear Operator	3	D	S
Stabilizer Assembler	10	C	S
Starting-and-Retracting-Motor Tester	12	B	S
Stationary Engineer	14	A	P
Steelscope Operator	13	D	S
Steel-Tubing Bender (aircraft mfg.)	5	D	U
Steel-Tubing Helper (aircraft mfg.)			
A Laborer, Process	5	E	U
Stencil Cutter III			
A Laborer	7	E	S

Title	Process Section	Training Grade	Suitability for Women
Stencil Cutter, Hand			
A Laborer	7	E	S
Stenographer	16	C	S
Sticker Operator (aircraft mfg.)	2	C	S
Stock Boy	17	E	S
Stock Clerk II	17	C	S
Straightener and Parts-Fitter	11, 12	B	P
Straightener, Hand (any ind.)	3	D	S
Stress Analyst, Aircraft (aircraft mfg.)	15	A	S
Stretch-Former Operator	3	C	P
Stretch-Former-Operator Helper (aircraft mfg.)			
A Laborer, Process	3	E	P
Stretching-Press Operator	3	D	U
Stripper			
A Laborer, Process	7	D	S
Striper IV (aircraft mfg.)			
A Laborer, Process	5	E	S
Striper, Hand I	7	C	S
Striper, Machine	7	E	S
Subassembler II	9, 4	C	S
Subassembler III	9, 4, 5	C	S
Subassembly Installer I	12	C	S
Subassembly Installer II	12	C	S
Supercharger-Cowling Installer (aircraft mfg.)			
A Subassembly Installer II	12	C	S
Supercharger-Regulator Assembler (aircraft mfg.)			
A Detail Assembler I	5	D	S
Surface-Grinder Operator I	2	B	P
Surface-Grinder II	2	D	S
Surface-Grinder-Operator Helper			
A Laborer, Process	2	D	S
Swaging-Machine Operator II	3	D	P
Swinging-Cut-Off-Saw Operator	10	D	S
Swiss-Jig-Boring-Machine Operator	1	B	P
Switchboard Operator II	16	A	S

Title	Process Section	Training Grade	Suitability for Women
Tab Assembler			
A Subassembler II	9	C	S
Table-Saw Operator (aircraft mfg.)	3	E	P
Tag Writer (aircraft mfg.)	5	E	S
Tail-Surface-Frame Builder			
A Subassembler II	9	C	S
Tank Builder II			
A Subassembler II	4	C	S
Tank-Fittings Assembler	6, 4	D	S
Tank Straightener	4	C	S
Tank Tester II	13	D	S
Tank Tester	6	C	P
Tank Washer IV			
A Laborer, Process	4	D	S
Taper IX			
A Laborer, Process	8	D	S
Telephone Operator II	16	C	S
Template Filer	1	D	S
Template Inspector	13	B	S
Template Lay-Out Man	1	B	S
Template Maker IV	1	B	S
Template Storage Clerk	17	D	S
Test Pilot (air trans.; aircraft mfg.)	12, 15	A	P
Tester I	2	D	S
Tester II	2	D	S
Thread-Milling-Machine Operator	2	C	S
Time Study Man II	16	C	S
Timekeeper Runner (clerical)	16	E	S
Tinner IV	5	E	S
Toggle-Press Operator II	3	C	P
Tool-and-Die Inspector (aircraft mfg.)	13	A	P
Tool-and-Die Maker	1	A	P
Tool-and-Die-Maker Apprentice	1	D	S
Tool Chaser (any ind.)			
A Laborer.	17	E	S
Tool Clerk	17	D	S
Tool Designer	15	A	P
Tool-Drawing Checker (aircraft mfg.)	15	A	P
Tool Dresser I	1	A	U
Tool Grinder I	1	C	S
Tool-Grinder Helper			
A Laborer	1	E	S
Tool-Grinder Operator	1, 2	B	P
Tool Hardener	6	A	P
Tool Inspector	13	A	P
Tool Maker	1, 2	A	P
Tool Maker, Bench	1	A	P
Tool Planner (aircraft mfg.)	15	A	P
Tool-Project Man (aircraft mfg.)	15	A	P
Tool Repairman	1	A	P

Title	Process Section	Training Grade	Suitability for Women
Tool-Salvage Man (mach. shop)	13	A	P
Tool Straightener	1	A	P
Tool Troubleman	1	A	P
Tracer IV	15	C	S
Tractor Operator	14	D	S
Training-Edge Man	3	C	S
Transportation Clerk II (aircraft mfg.)	17	E	S
Treasurer	16	A	S
Trim-and-Cover Inspector	13	C	S
Trim-Saw Operator	2	D	S
Trim Sawyer I	10	E	S
Trimmer I			
A Subassembly Installer II	8, 12	B	S
Trimmer II	8	C	S
Trimmer III	8	C	S
Trimmer Helper VI			
A Laborer, Process	8	D	S
Truck Driver, Heavy	14	E	U
Truck-Driver Helper			
A Laborer	14	E	U
Truck Driver, Light	14	E	S
Trucker, Hand,			
A Laborer	14	E	P
Truss Assembler			
A Subassembler III	11	C	S
Tube Annealer (aircraft mfg.)	5	D	S
Tube Assembler (aircraft mfg.)			
A Detail Assembler II	5	C	S
Tube Bender Hand (aircraft mfg.)	5	C	S
Tube-Bender Helper (aircraft mfg.)			
A Laborer, Process	5	E	S
Tube-Bending-Machine Operator I	3, 5	D	S
Tube-Bending-Machine-Operator Helper (aircraft mfg.) A Laborer, Process	5	E	S
Tube Cutter V			
A Laborer, Process	11, 5	E	S
Tube Flarer (aircraft mfg.)	5	D	S
Tube-Flarer Helper (aircraft mfg.)			
A Laborer, Process	5	E	S
Tube-Flaring-Machine Operator	5	D	S
Tube Wrapper (aircraft mfg.)			
A Laborer, Process	5	E	S
Tubing Bender II	5	C	S
Tubing Inspector II	13	C	S
Tubing Oiler			
A Laborer, Process	11, 5	E	S
Tubing Tester	13, 5	D	S
Tubing Washer	6, 5	D	S
Tubing Washer	2	B	P
Turret-Lathe Operator	2	B	P
Turret-Lathe Operator, Automatic	2	E	S
Turret-Lathe Set-Up Man (mach. shop)	2	B	P
Turtle-Back Man	10	C	S

Title	Process Section	Training Grade	Suitability for Women
Unisaw Operator (aircraft mfg.)	3	D	P
Unishear Operator, Portable (aircraft mfg.)	3	D	P
Universal-Grinder Operator	2	B	S
Universal-Turret-Lathe Operator	2	B	P
Universal-Woodworking-Machine Operator	10	B	P
Upholsterer II	8	B	P
Upholstery-and-Trim Cutter	8	C	S
Upholstery-and-Trim Inspector	13	C	S
Upholstery Cleaner I			
A Laborer, Process	8	E	S
Upholstery-Material Marker			
A Laborer, Process	8	E	S
Upright-Drill-Press Operator	2	D	S

Title	Process Section	Training Grade	Suitability for Women
Vacuum-System Tester (aircraft mfg.)	12	C	S
Vane-Strip Installer	8	C	S
Variety-Saw Operator	10	D	S
Veneer Gluer I			
A Laborer, Process	10	E	S
Vertical-Boring-Mill Operator	2	A	P
Vertical-Drill-Press Operator	2	D	S
Vertical-Milling-Machine Operator	2	B	P
Vertical-Shaper Operator	2	B	P
Vice-President	16	A	S

Title	Process Section	Training Grade	Suitability for Women
Wash-Tank Man I			
A Laborer, Process.	7	E	S
Washer	6	E	P
Water Tender III	14	C	S
Weigher II (clerical)	17	D	S
Weight Analyst, Aircraft (aircraft mfg.)	15	A	S
Welder-Set-Up Mechanic	11, 5	C	P
Welder Helper, Combination	14	D	U
Welder Helper, Spot (aircraft mfg.)			
A Laborer, Process	4	E	S
Welded-Parts Inspector	13	C	S
Welder, Acetylene	1, 4, 5 11, 14	C	S
Welder, Aluminum	4	C	S
Welder Apprentice, Combination (any ind.)	14	B	S
Welder, Arc	1, 4, 5 11, 14	C	S
Welder, Combination	1, 5 11, 14	B	S
Welder Foreman, Combination (any ind.)	14	A	P
Welder Helper, Acetylene	11, 5	D	S
Welder Helper, Arc (any ind.)	1, 4 5, 11	D	S
Welder Leadman (any ind.)	1, 5, 11	A	S
Welder, Oxyhydrogen (tentative)	4	C	S
Welder, Spot	4	D	S
Welding Engineer	15	A	P
Welding Inspector	13	B	S
Wind Tunnel Maintenance Man (aircraft mfg.)	15	A	U
Window Installer (aircraft mfg.)	12	C	S
Wing Assembler II	10	C	S
Wing Assemblyman			
A Major Assembler	9	C	S
Wing-Assemblyman Helper	9	D	S
Wing Coverer	8	C	S
Wing-Cover Installer (aircraft mfg.)			
A Subassembly Installer II	12	C	P
Wing-Flap Installer (aircraft mfg.)			
A Subassembly Installer II	12	C	P
Wing-Frame Builder			
A Subassembler III	9	C	S
Wing Installer (aircraft mfg.)			
A Major Assembler	12	C	P
Wing-Tip Assembler			
A Subassembler II	9	C	S
Wire Cutter (aircraft mfg.)	5	E	S
Wire Tester (aircraft mfg.)	5	E	S
Wireworker	5	C	P
Wood Bender	10	D	P
Wood Inspector	13	B	S
Wood-Tool Maker	1	B	S

Title	Process Section	Training Grade	Suitability for Women
Wood Toolmaker Apprentice (aircraft mfg.)	1	B	P
Wood-Tool-Maker Helper A Laborer, Process	1	D	S
Wrapper I	17	E	S
Wrapper and Solderer	5	D	S

APPENDIX 2. - DEFINITIONS OF OCCUPATIONS IN THE AIRFRAME INDUSTRY

ABRASIVE-WHEEL-FRICTION-SAWING-MACHINE OPERATOR 6-78.613 A FRICTION SAWING-MACHINE OPERATOR who cuts hard material with a friction saw equipped with a very thin, abrasive wheel.

ACCESSORY INSTALLER (aircraft mfg.) An UPHOLSTERY AND TRIM CUTTER who cuts leather, canvas, and rubber materials according to pattern and installs cords and metal accessories on cut parts preparatory to assembly; attaches grommets and metal fastener by punching out holes with steel awl and hammer or inserts grommets by machine, ref. GROMMET-MACHINE OPERATOR; inserts sash cords in material before and after sewing; cuts seat shock cords into specified lengths, frays, shellacks, and rolls ends into balls to prevent unraveling.

ACCOUNTANT, CHIEF 0-01.20. AN ACCOUNTANT, GENERAL who supervises and assists bookkeepers in the performance of their duties; compiles or supervises the compilation of reports on cash receipts, expenditures and other financial reports; may oversee the disbursement of funds. The bookkeeping and auditing policies vary in different establishments.

ACCOUNTANT, COST 0-01.10. Devises, installs, and control a system of determining the production cost of products by units, or jobs; distributes costs between the various divisions of management and production; classifies production costs into wages, materials, overhead; prepares budgets and tax returns; interprets accounts to clients; applies sound principles of accounting to future development of business; plans, organizes, and directs work of ACCOUNTANT, JUNIOR AND ACCOUNTANT, SENIOR.

ACCOUNTANT, GENERAL 0-01.20. Devises or executes previously devised accounting systems to meet the needs of a particular concern; prepares financial statements, audits books, and does other accounting work as business requires; assumes responsibility for accuracy of the books after the audit.

ACETYLENE-BURNER OPERATOR 6-85.210. Sets up and operates oxyacetylene burning (cutting) equipment to perform metal-cutting operations; the object cut and the purpose of cutting varies in different establishments, such as burning sprues from castings in a foundry, cutting up scrap metal in a scrap-metal yard, or trimming girders or other structural shapes on a project; assembles cutting equipment by connecting torch to hose and hose to regulator on oxygen and acetylene tanks; screws proper tip into torch nozzle, lights torch, and regulates the flow of gases to obtain a suitable cutting flame by manipulating small valves on handle of torch; holds torch to metal and guides torch along the desired cutting line as the flame melts and cuts a narrow channel through the metal. May interpret blueprints or sketches and lay out (mark) cutting lines on the metal, using scales, dividers, and other instruments. May charge gas generator by renewing gas-generating chemicals and manipulating valves and other mechanism on tanks. Frequently the worker is familiar with only one type of cutting operation, such as cutting scrap metal, and is not transferable to other types of cutting. May weld; may operate an oxyacetylene cutting machine.

ACETYLENE BURNER, PORTABLE 6-85.210. An ACETYLENE-BURNER OPERATOR whose burning equipment is mounted on a hand truck and can be moved to any desired site.

AERODYNAMIST (aircraft mfg.). An AERONAUTICAL ENGINEER. Evaluates probable physical traits, performance, and cost of operation of newly designed airplanes, guided by an analysis of preliminary specifications and the testing of models in wind-tunnels.

AERONAUTICAL ENGINEER 0-19.03. A classification title for persons meeting the educational, experience, or legal qualifications in the general fields of aeronautical engineering that have been established by the engineering colleges, the airplane manufacturing industries, or licensing authorities. Persons within this group usually specialize in one or more of the following branches of aeronautical engineering: the designing of airplanes, seaplanes, and flying boats for military or transportation purposes, including the design of propellers, sea wings, and other parts of planes; the testing of models to determine flying characteristics of plane; the testing of finished parts of plane equipment, and the assembled plane; the analyzing of the stresses set up in the parts of the plane by applied loads to determine if plane will withstand the condition of flight under which will be flown; the supervising of the assembly of plane and the installation of the motors, instruments and other equipment; the supervising of technical phase of air transportation; the conducting of research in any of above fields. The following occupation is typical of those classified under this title: AIRPLANE DESIGNER (aircraft mfg.)

AILERON ASSEMBLER 7-03.552**. A SUBASSEMBLER II. A SMALL-PARTS ASSEMBLER II who specializes in assembling airplane ailerons from pre-fabricated parts.

AIR-BRUSH OPERATOR I 7-16.210 A PAINTER, SPRAY I who spreads paint or varnish over surfaces of wooden articles; mixes paint or varnish in container or mixing trough; places articles in spray booth and sprays all surfaces. May do two-color work by masking areas with removable gummed tape to shield them from the second coloring. May rub surfaces of articles with sandpaper or steel wool to remove rough spots before painting.

AIR-COMPRESSOR OPERATOR 7-72.580. Operates and maintains an air compressor driven by steam, electric, or gasoline power unit, to supply compressed air for operation of pneumatic tools and equipment, such as stone cutting tools and hoists; starts power unit, opens and closes valves that control supply of air to tools and equipment, or regulates controls that automatically maintain air supply under constant pressure, interpreting readings of temperature and pressure gages and making adjustments to equipment; oils, greases, and cleans equipment. May connect pipes leading from compressor to tools and equipment, and make minor repairs to compressor.

AIR-MAZE ASSEMBLER 5-03.554**. A SUBASSEMBLER III. A FITTING MAN who assembles a special type of air maze used to house the air filter of an airplane.

AIR-PRESSURE TESTER; pressure tester (aircraft mfg.) A TESTER II (found.; mach. shop) who tests resistance of metal airplane tubing to air pressure by plugging ends, submerging tube in water and forcing compressed air at specified pressure into the tube.

AIRCRAFT-ENGINE INSTALLER 5-80.130*. An AIRCRAFT-ENGINE MECHANIC who disconnects and connects engines to the frameworks (mounts) to which they are bolted for testing and for installation in airplanes; disconnects tubing, wiring, controls, and accessories prior to overhaul; lifts engine from mount, using chain hoist; reconnects overhauled engine to special testing blocks and tested engines to mounts for re-installation in airplanes; services and maintains engine mounts, cleaning parts and replacing any that are defective.

AIRCRAFT-ENGINE MECHANIC 5-80.130*. Inspects, services, repairs and overhauls airplane engines; examines external appearance of engines and listens to them in operation to detect sounds indicative of malfunctioning; replaces worn or damaged parts, such as cylinders and carburetors, while engines are still mounted in airplanes; removes engines from airplanes, disassembles them, and checks all parts for wear, warping, or other defects; repairs or replaces defective parts, and reassembles and reinstalls engines; performs miscellaneous duties to service engines, such as flushing crankcase, cleaning strainer screens, and greasing moving parts, uses mechanic's tools and equipment, such as wrenches, hoists, and gages. Must hold license from Civil Aeronautics Authority as Aircraft Engine Mechanic, or perform duties under supervision of licensed worker.

AIRCRAFT-ENGINE-MECHANIC APPRENTICE 7-99.050*. Performs duties as described under APPRENTICE I.

AIRCRAFT-ENGINE-MECHANIC FOREMAN 5-80.130*. Performs duties as described under FOREMAN I. Supervises AIRCRAFT-ENGINE MECHANICS in servicing, repairing, and overhauling airplane engines. May personally work on engines.

AIRCRAFT-MACHINE-SHOP APPRENTICE (aircraft mfg.) Performs duties as described under APPRENTICE I.

AIRCRAFT MECHANIC 5-80.120*. Inspects, overhauls, and services airplanes except engines; repairs, replaces and assembles such parts as wings, fuselage, tail assembly, landing or flotation gears, control cables, fuel and oil tanks, and lines; removes damaged parts and installs replacement from stock, or duplicates wooden and metal parts; performs necessary welding, metal fitting, covering, doping, rigging, and woodworking operations, using metalworking, woodworking, and welding equipment. Must hold license from Civil Aeronautics Authority as Aircraft Mechanic or perform duties under supervision of licensed worker.

AIRCRAFT-MECHANIC HELPER 7-80.120*. Assists AIRCRAFT MECHANIC in overhauling and servicing airplanes: removes damaged parts and cleans section adjacent to break; holds new parts in position during installations; uses woodworking and metalworking tools to fabricate minor parts; prepares metal surfaces for painting and prepares fabric surfaces for recovering and doping, performs other duties as directed.

AIRCRAFT-SHEET-METAL-MECHANIC APPRENTICE (aircraft mfg.) Performs duties as described under APPRENTICE I.

AIRCRAFT-SUBASSEMBLER APPRENTICE; subassembly apprentice (aircraft mfg.) Performs duties as described under APPRENTICE I.

AIRPLANE COVERER 5-03.010. Sews airplane fabric to airplane structure stretches cloth over wing or fuselage structure, and sews it in place with a straight or curved needle so that thread passes around structural members; applies a single coat of dope (tautening lacquer) to the covering, and applies strips of pinked-edge fabric tape over the rows of stitches to protect and cover them, securing them by the cohesion of the dope on the tape and cover.

AIRPLANE DESIGNER 0-19.03. An AERONAUTICAL ENGINEER. Creates new designs for airplanes, taking into consideration the best features of older models; experiments constantly to create efficient design.

AIRPLANE-HEATER MAN (aircraft mfg.) A SUBASSEMBLY INSTALLER I. A PLUMBER AIRCRAFT who fabricates and installs the pipe lines attached to the heating system of an airplane.

AIRPLANE INSPECTOR I 5-03.810. Inspects aircraft fittings and assemblies for conformation with specifications: checks dimensions of fittings with gages, and compares with blueprint: passes, rejects, or returns for reworking the material inspected; performs hardness test on material received from the heat treating department by means of a hardness testing machine.

AIRPLANE-MECHANIC APPRENTICE II (aircraft mfg.) A general term used in this industry to designate APPRENTICES I who are engaged in learning occupations involving the fabrication and assembly of airplanes and airplane parts. Specifically designated according to the trade being learned as AIRCRAFT-SHEET-METAL-MECHANIC APPRENTICE; AIRCRAFT-SUBASSEMBLER APPRENTICE.

AIRPLANE MECHANIC, OVERHAUL 5-80.130*. An AIRCRAFT MECHANIC who completely overhauls and repairs airplane parts: dismantles and repairs metal tail, fuselage, and wing assemblies, such as ailerons, elevators, and rudders, cutting out damaged sections and cutting, shaping, welding, and riveting on sheet metal patches; dismantles and repairs landing gear, interior furnishings, controls, and other equipment; makes repairs when feasible or installs new parts, using equipment, such as jacks, hoists, drill press, sheet-metal-working machines, and ordinary mechanics' tools; repairs fabric surfaces by covering with special cloth and spraying with dope. May disconnect and remove engine from airplanes for overhaul.

AIRPLANE RIGGER I 5-80.500. Alines wings and tail surfaces with the fuselage, and installs and adjusts bracing wires, struts and control cables; bolts wings to fuselage and bolsters wing tips with blocks; secures tie rod or struts to wing and fuselage fittings with clevis pins, and tightens tie rod by rotating it with a wrench; checks angle-of-incidence with a level and conforms this angle with that specified by a rigging chart by altering the tension in front or rear flying wires and landing wires; attaches tail surfaces, alines them, and braces with tie rod or struts; cuts and splices control cables and installs them between the control horns and cockpit controls.

AIRPLANE WOODWORKER I 4-33.916 Constructs, by hand and machine, wooden parts of aircraft, such as fairing, door and window frames, floorboards, and component wooden members of the primary structure.

AIRPLANE WOODWORKER II 6-33.925** Assembles wooden airplane units, such as spars, wings, fins, and fuselage sections from prefabricated wood parts: places prefabricated wooden structural members in their proper places in a jig, verifying junctions with squares and straightedges, and cutting off excess wood with a hand saw; glues and nails joints; smooths the structural members of the units, using sandpaper and tools such as wood rasps, planes, and scrapers; strengthens joints by bolting or screwing braces to the wood at the angles; attaches fittings, such as hinges and brackets, at specified places; glues and nails wooden skin to framework, and finishes the units by removing the nails and smoothing the skin when the glue is dry.

AIRPLANE-WOODWORKER HELPER 6-33.927** Assists AIRPLANE WOODWORKER I in the construction of wooden airplane structural members: cuts out simple parts of wing, tail, and fuselage assemblies under supervision, using power tools, such as saws, planers, shapers, and routers.

AIRPORT SERVICEMAN 7-49.028*. Performs any one or combination of the following duties in the maintenance of airports and in servicing aircraft: periodically inspects buildings and hangars to detect fire hazards and violations of airport regulations: examines fire-fighting equipment, noting any repairs to be made and filling depleted hand fire extinguishers; drives, services, and makes necessary minor repairs to fire trucks and tractors; fills light-bombs with kerosene and positions them on landing field for illumination purposes; fills, cleans, and lights smoke pots used to indicate wind direction, and repairs or replaces wind sock; services lighting equipment, such as landing lights and boundary lights, replacing defective bulbs and burnt-out fuses; fills holes and levels low places and bumps in runways and taxing areas; cuts grass on airport grounds; fills airplane tanks with gasoline and oil; starts airplane motors by cranking propellers; checks and reports amount of gasoline and oil supplies; blocks and stakes down airplanes; records number of planes stored in hangars, plane landings and departures, number of passengers carried on planes, and other pertinent airport data. May wash and clean cabins and exterior surfaces of airplanes. May render first aid in emergencies, driving ambulance to scene of accident. May be required to possess a Red Cross first-aid certificate.

AIRSHIP INSPECTOR 5-03.830*. As for AIRPLANE INSPECTOR I.

ANGLESMITH 4-86.010. A BLACKSMITH II who bends, shapes, bevels, and welds light gage metal to produce angular shapes, such as door frames, tank frames, and brackets.

ANNEALER 6-87.110 Tends an annealing furnace in which metal parts are subjected to heat treatment to relieve internal strains, and to soften and strengthen the metal: packs parts with sand in iron pots or boxes and seals them with clay to prevent uneven heating of parts: loads pots or boxes on a railcar and pushes it into furnace, or on a conveyor truck that carries them into furnace; lights oil, gas, or pulverized coal burners and regulates fuel and air supply to control heat in furnace so that temperature is raised gradually to desired point at which it is held for proper length of time; allows furnace to cool slowly and unloads or supervises unloading metal parts; may heat metal parts to predetermined temperature and quench them in oil or water or harden them.

ANNEALER, TORCH 9-02.01 A LABORER, PROCESS. Heats areas of sheet metal, prior to stamping or between drawing operations, to facilitate forming of difficult shapes; uses a hand torch, moving it back and forth slowly over surface of metal until proper heating has been accomplished.

ANODIC-CLAMP REPAIRMAN 6-74.930** Cleans and repairs clamps used for holding metal objects during electroplating operations: cleans surfaces of corroded clamps, using steel wool and emery cloth; replaces defective parts, such as springs, bolts, and screws: fabricates new parts as needed by cutting and shaping sheet metal and wire, using snips, pliers, hammers, files, and portable electric drills.

ANODIC OPERATOR 4-74.010* A PLATER I who coats aluminum or dural airplane parts with a corrosion-resisting plating (chromate).

ANODIC-OPERATOR HELPER; anodizer helper (aircraft mfg.) Performs the duties as described under HELPER III.

ARBOR-PRESS OPERATOR 6-88.611. Operates a power-driven or hand operated press to force together tightly fitting parts, such as arbors, bushings and the like, onto shafts or into housings that support them: alines parts under ram of press; pulls down on lever, or steps on pedal, causing ram to descend and force one part into the other.

ARMAMENT INSPECTOR (aircraft mfg.). A FINAL-ASSEMBLY INSPECTOR who inspects armament installations, such as bomb racks, machine guns, and plate, verifying them against blueprint specifications, using precision measuring devices.

ARMAMENT INSTALLER I (aircraft mfg.). A SUBASSEMBLY INSTALLER I. Installs in airplane fuselages armament accessories and supports, such as ammunition box holders, gun mounts, bomb racks, and armor plates, ref. ARMOR-PLATE INSTALLER, into proper locations, inserting shims and fillers where required to overcome structural variations, using measuring instruments, such as machinists' scale and combination square to obtain accurate alinement, drilling and reaming holes whose location could not be predetermined using an electric tool, bolting parts and tightening bolts with a hand wrench; similarly installs bomb release, emergency release, and door activating mechanisms, fitting component parts, such as retraction arms and motor, gear boxes, control lever, rods, tubing, and pulleys and using measuring instruments or following blueprint instructions. May be specifically designated according to degree of proficiency acquired, as armament installer, class a; armament installer, class b; armament installer, class c.

ARMAMENT INSTALLER II (aircraft mfg.) A SUBASSEMBLY INSTALLER I. Installs guns and turrets and completes the installation of the bomb release mechanism in assembled airplanes: (1) fits gun turrets into position by securely bolting, connecting controls and testing operation, making necessary adjustments by tightening or loosening fastenings; (2) fits guns into preinstalled mounts, drilling and bolting as necessary, using an electric hand drill and measuring instruments, such as scale and combination square; checks operation of movable guns for clearance and mobility and ascertains that gun charging controls, preinstalled ammunition belts, and empty cartridge cases are properly located and installed, adjusting parts as necessary with small hand tools; (3) completes installation of bomb and emergency release mechanisms by threading cables through tubing, and adjusts operation of apparatus by turning threaded connections to shorten or extend length of rods, using protractors to check the extent of movement. May install armor plate, ref. ARMOR-PLATE INSTALLER, and gun and sight mounts and supports, ref.ARMAMENT INSTALLER I. May be specifically designated according to degree of proficiency acquired, as armament installer, class a; armament installer, class b; armament installer, class c.

ARMAMENT MECHANIC; armament assembler; armament installer (aircraft mfg.) Inspects, assembles, installs, and tests machine guns and installs bomb racks in airplanes: disassembles guns to inspect and oil parts, reassembles, attaches accessories, such as sights, firing devices, and mounting frame, and adjusts parts to achieve firing precision, using a special gage and measuring tools; positions and secures guns in airplanes or uninstalled armament sections by turning self-locking fixtures, connects preinstalled cables of charging and firing devices with ring locks and cotter keys, adjusting turnbuckles as necessary; attaches firing feeds, ejection chutes, and bomb racks using metal pins and spring connectors; lifts armament sections by means of mechanical hoist and installs them in airplanes; tests guns in detached assembly on firing range or on test flight, disassembles, and adjusts parts as necessary using his knowledge of gun mechanics; alines battery of rigid mount guns so that shells will converge at specific point (bore-sighting) by leveling plane with leveling devices and jacks, charging guns, inserting sighting device, aiming at target until designated point is visible, and adjusting gun positions with wrenches.

ARMATURE WINDER I 6-99.011. Winds coils of wire into slots of armature core: mounts core vertically in a frame fixed to a horizontal shaft and lines each core slot with insulating material; fastens end of wire from reel to core and rotates frame by hand; guides wire from one slot to another to form a coil and cuts wire when revolution counter shows enough wire has been wound; taps coils firmly into slots and drives in wedges to hold them in place against centrifugal force.

ARMATURE WINDER II 6-99.011. Lines slots of armature core with insulating material and inserts ready wound coils; wedges coils tight and taps them down; scrapes insulation from ends of coiled wire and solders them at the correct places, exercising great care to insure correct connections.

ARMOR-PLATE INSTALLER (aircraft mfg.). A SUBASSEMBLY INSTALLER II. Installs preformed steel armor plate on assembled fuselages; bolts brackets to plates prior to installation; examines fuselage to determine that assembly is satisfactory for plate installation; marks locations for plate attachment, fits plates into position aided by another worker, drills bolt holes with an electric hand drill; inserts and tightens bolts, using hand wrenches; checks installation against blueprint specifications for accuracy, using a micrometer and other precision measuring tools. Workers may be specifically designated according to degree or skill as armor-plate installer, class a; armor-plate installer, class b;armor-plate installer, class c.

ASBESTOS WORKER, GENERAL 5-33.110 Covers with insulating material the exposed hot or cold surfaces of equipment, such as boilers, ducts, pipe lines and tanks; binds wires around object being insulated either to hold prefabricated insulating material in place or to form a base and reinforcement for plastic insulating material; applies coats of plastic insulating material with trowel.

ASSEMBLY PLANNER; assembly-book clerk; assembly-planning clerk (aircraft mfg.). An ENGINEERING CLERK who plans and compiles lists of aircraft parts for the release of engineering drawings. May supervise CLERKS, GENERAL OFFICE who assist in making up lists.

ASSEMBLYMAN VIII 5-03.552**. A MAJOR ASSEMBLER. Joins the component parts of airplane units put together by SMALL-PARTS ASSEMBLER III to make complete assemblies, such as tails, wings and fuselage sections: fits together, in jigs, structural members, such as bulkheads, ribs, and spars, and rivets the parts together; covers airplane skeleton work with sheet metal (skin), trimming the metal as necessary and riveting the skin to the skeleton. May repair damaged sheet metal surfaces. Usually specifically designated according to the degree of proficiency attained, as assemblyman, first class; assemblyman, second class; and according to the assembly worked on, as FUSELAGE ASSEMBLYMAN; WING ASSEMBLYMAN.

ASSEMBLYMAN IX 7-03.562**. A SUBASSEMBLY INSTALLER II. Attaches wood trim to wood airplane fuselage frames preparatory to covering with fabric: fits strips of wood trim onto fuselage, cutting off the excess with a hand saw; fastens trim to fuselage in specified positions using special clamps and screws; cuts notches in trim and screws gussets in place; installs baggage floor; finishes trim by planing and varnishing it.

ASSEMBLYMAN HELPER II 7-03.553**. Assists ASSEMBLYMAN VIII in joining the component parts of airplane units, such as tails, wings, and fuselage sections: Procures parts and materials from storage bins; files metal by hand to trim off excess and to remove burrs; assembles and fastens together spars and other simple structural units with bolts, screws and clamps; bucks up rivets. Sometimes specifically designated according to part worked on, as WING-ASSEMBLYMAN HELPER.

AUDITOR 0-01.60. Examines the accounts or books of an establishment as prepared by ACCOUNTANTS, GENERAL; BOOKKEEPING (Clerical), and other clerical workers to determine if the accounts of the various types of transactions have been entered properly in the books; adjusts, lists, and reports to the management all errors found: verifies balances already made or balances new accounts keeping an accurate and complete check on the status of all payments made to and made by the company as compared with the manner in which the transactions were recorded. May make up a complete report showing total assets, liabilities, and profit and loss, or make up an itemized report showing such items as cost operation, debts incurred, volume of sales, net profit, and depreciation on equipment. May operate an adding machine.

BACK-FACING-MACHINE OPERATOR (mach. shop) Cuts a flat seat on the interior surfaces of castings so that nuts and rivets can be installed flush on the inside: inserts a hook through holes drilled in the castings; attaches back facing tool to hook, and adjusts the chuck to draw the tool against the interior surface of the casting; fastens a jig around the work with bolts; starts motor, causing the tool to rotate at high speed; feeds the casting to the facing tool by pulling a lever, trimming away excess metal to smooth a seat for nuts or rivets; measures completed facings with micrometers, calipers, or depth gages.

RAFFLE ASSEMBLER 6-95.074**. A RIVETING-MACHINE OPERATOR IV who rivets together sheet-metal parts to form the baffle plates used in gasoline and oil tanks to retard or deflect the flow of liquid when the tank is tilted.

BAND-RIPSAW OPERATOR 6-33.211 Rips boards to desired width on a sawing machine equipped with a band saw, the teeth of which are sharpened and set to cut along the grain of the wood; adjusts position of ripping fence for the width of board desired; raises or lowers saw guide to thickness of board; adjusts power feed rolls so that they will properly grip boards; starts saw and moves lever to regulate speed of feed rolls; lifts board onto saw table, rests one edge against ripping fence, and slides board into feed rolls that carry it through machine.

BAND-SAWING-MACHINE OPERATOR 6-78.611. Saws metal stock to specified length, width, bevel, or miter, or cuts projections, such as gates and risers, from castings or excess metal from stampings with a saw that utilizes a saw-toothed, endless, metal band; measures work and marks line of cut with chalk or scriber: adjusts position of work on table and tightens clamps: starts machine; turns handweel or engages power feed to feed work against saw band; may adjust a nozzle to direct a stream of lubricating liquid over the saw cut; observes operation of machine and stops it to remove work when cut is completed.

BAND-SCROLL-SAW OPERATOR 6-33.212 Saws flat wooden pieces or blocks along curved or irregular outlines, or saws thick wooden pieces to size, using a band-scroll saw (m): marks outline of article to be made on upper surface of board with pencil, compass, and ruler, or draws with pencil around a template (pattern), or pastes a paper pattern on the surface; starts saw; guides piece against saw along outline; replaces dull saw bands with sharp ones.

BAR-TOOL-GRINDING-MACHINE OPERATOR 5-84.110. A TOOL-GRINDER OPERATOR who operates a special grinder (m) designed for sharpening lathe, planer, and shaper tools: clamps tool in vise on machine; turns vise to desired angle as indicated on engraved scale and clamps it in position; turns on grinding wheel: turns handwheel to feed tool against wheel.

BARBER-COLEMAN OPERATOR 5-84.110. A TOOL-GRINDER OPERATOR (mach. shop) who sets up and operates a grinding machine which automatically resharpens reaming tools: sets up cutting heads, cams, gages, and other controls, according to the size of the reamer to be dressed; installs reamer in fixture; operates switches and other controls to make four separate cuts, from the first rough cut to the final finish cut.

BATTERYMAN II, 5-89.411; battery attendant; battery chargeman; battery charger; battery repairman battery serviceman, chargeman; charger. Charges and repairs batteries used in automobiles, tractors, or electrical equipment: (I) when charging battery, removes battery from equipment; makes electrical connections between battery and charging equipment; starts charging unit; regulates rheostat to control flow of current to battery; (2) when repairing battery, examines battery to determine defect; disassembles battery, melting the sealing pitch with small gas torch; replaces defective part and reassembles battery, pouring hot pitch into case to seal cells. May make repairs to charging equipment, assist production workers, and perform other duties as assigned.

BEAM MAN III 4-80.060**. A SHEET-METAL WORKER, AIRCRAFT II who specializes in fabricating and assembling parts of an airplane engine cooling system (cowl beams).

BELT SANDER 6-33.III Smooths rough surfaces of boxes, wooden furniture parts, milled stock, and other wooden sections or articles, using a revolving belt, the surface of which is covered with an abrasive material; adjusts tension of sanding belt and height of table with hand wheels; starts belt revolving; manipulates stock against revolving belt or presses belt down on stock with a pressure block and moves table bearing stock so that the entire surface of stock is smoothed. Replaces worn out belts with new ones. May be specifically designated according to type of machine used, as BELT SANDER, HORIZONTAL; BELT SANDER, VERTICAL; or by the article sanded, such as HANDLE SANDER and MOLDING SANDER.

BELTMAN I 7-83.611. Makes and repairs leather, canvas, or other type belts used to drive machinery or convey materials: inspects belts and replaces badly worn ones; mends broken belts by cementing, lacing, or sewing ends together, or by clipping ends together with patented metal fasteners clipped to belt; makes new belts by cutting belting material to length and joining the ends: dresses belts.

BENCH ASSEMBLER III 6-78.632. Fits and fastens metal parts together with bolts, screws, or rivets, to assemble machine products partially or completely. May remove small quantities of metal by hand with files and scrapers to produce accurate fits between parts. May melt bearing metal and pour it into bearings of moving parts.

BENCH-ASSEMBLY INSPECTOR 4-78.671**. A INSPECTOR (mach. shop) who inspects airplane parts fabricated by BENCH ASSEMBLYMEN.

BENCH ASSEMBLYMAN 5-03.554**. A SUBASSEMBLER III. A SKELETON ASSEMBLER I who puts together smaller parts, such as ribs, spars, stiffeners, and other fittings that can be more advantageously assembled at a bench using relatively smaller jigs and fixtures. Workers are usually specifically designated according to proficiency acquired, as bench assemblyman, first class; bench assemblyman, second class.

BENCH-ASSEMBLYMAN HELPER 9-03.01**. A LABORER, PROCESS. Performs duties as described under HELPER III.

BENCH GRINDER 6-77.710. Cleans and rough-finishes the surfaces of metal objects by holding them against the rotating abrasive wheel of axle on which one or more abrasive wheels are mounted: turns on electric motor to start machine; lifts object to be ground and rests it against a small shelf or rest adjacent to wheel: presses work against wheel, turning it about with hands to accomplish the desired grinding.

BENCH HAND IX 4-80.010. A SHEET-METAL WORKER II who works inside of a shop, fabricating various articles and equipment out of sheet metal by hand and by operating the various machines used in sheet-metal work. May lay out articles.

BENCH REPAIRMAN I 4-75.120. A MACHINIST, BENCH who repairs tools, dies, gages, and light machinery.

BENDING-MACHINE OPERATOR HELPER, PNEUMATIC 9-03.01** A LABORER, PROCESS. Performs duties as described under HELPER III.

BENDING-MACHINE OPERATOR, PNEUMATIC 6-94.240** Shapes sheet metal according to forming jigs in a bending machine; starts machine and simultaneously inserts forming jig and sheet metal between the guide wheel and clamping jaws of the machine that grasp and pull both the jig and the metal beneath a wheel having an inverted V-shaped rim that squeezes the metal to conform to the jig; stops machine so that BENDING-MACHINE-OPERATOR HELPER, PNEUMATIC can clamp the bent sections of the metal to the forming jig for further processing.

BLACKSMITH II 4-86.010. Forges metal articles and parts for the building, repairing, or manufacturing of equipment: heats metal in a forge and hammers it into desired shape on an anvil, in a steam, electric, or compressed-air--powered hammer. Forge-welds metal by heating parts and hammering them together; sharpens hand and machine tools, such as chisels, drills, and picks, by heating them and hammering the cutting edges to proper shape. Tempers metal by heating it to proper temperature and then dipping it into a quenching medium; repairs or builds equipment such as sleds, wheelbarrows, small tools, and hooks. May operate an annealing furnace, and a pneumatic press. May cut and weld metal with oxyacetylene or electric-arc torch. May shoe horses.

BLACKSMITH APPRENTICE 7-97.010. Performs duties as described under APPRENTICE I.

BLACKSMITH HELPER 8-93.71. A LABORER, PROCESS. Performs duties as described under HELPER III.

BLUEPRINTING-MACHINE OPERATOR I 7-86.330. Operates a machine that automatically exposes, develops, washes, and dries blueprints; determines time of exposure by examining tracing and sets speed controls by hand accordingly; pastes one end of roll of blueprint paper to lead paper in machine and runs machine until blueprint paper is tight on feed table; places tracing on paper and starts machine and arc lights (the tracing-covered paper is carried around a cylinder where it is exposed to arc light; the tracing is then ejected from the machine and the exposed paper is carried through a series of developing and rinsing baths to a drying cabinet from which it emerges as a finished print.) Prepares vandyke prints by exposing tracing-covered vandyke paper to arc light and developing the exposed paper by immersion in various baths. Makes ozalid prints in same manner as vandyke prints, except that the paper is dry-developed by ammonia fumes in an ozalid developing machine.

BLUEPRINTING-MACHINE OPERATOR II 7-86.340. Operates a simple type of blueprinting machine consisting of a printing frame which is pushed into sunlight for the exposing process and which may not have an automatic drier.

BOLT-THREADING-MACHINE OPERATOR 6-78.141. Sets up and operates a machine that cuts external screw threads on bolts or rods; selects and installs threading die of proper size in machine; clamps rod or bolt in vise on machine and turns handwheel to feed end of rod into rotating die that cuts threads on the external surface; reverses handwheel to withdraw rod and removes it from vise.

BOOKKEEPER 1-01.02. Keeps a complete and systematic set of records of all business transactions in proper record books and on special forms; balances books and compiles reports at regular intervals to show the receipts, expenditures, accounts payable, accounts receivable, profit or loss, and many other items pertinent to the operation of a business; calculates wages of employees from plant records or time cards, and makes up checks or draws cash from bank for payment of wages. May prepare, type, and mail monthly statements to customers. May perform other duties, such as taking telephone orders and making bank deposits. May operate an adding machine. May take and transcribe dictation.

BORING-MACHINE OPERATOR, AUTOMATIC 6-78.041. Operates one or more automatic or semi-automatic machines that bore finished holes in metal parts; lifts part onto machine table by hand or with a hoist and sets clamps to hold it in position; starts machine and moves levers to advance cutting tools into position to start boring; stops machine when operation is completed and tools have automatically been withdrawn, and removes part from table; checks work occasionally to determine whether machine is adjusted correctly. May set up and adjust cutting tools to perform specified operation.

BORING-MACHINE OPERATOR, HORIZONTAL 6-33.411 Sets up and operates a horizontal single-spindled boring machine to bore holes of specific diameter and depth in wood parts to prepare them for assembly; fits bit into chuck of horizontal spindle and tightens chuck jaws with wrench; clamps stock on table or spindle stops to control depth of hold; starts machine and presses on pedal to move table bearing stock into rotating bit or to feed rotating bit into the stock; releases pedal to withdraw stock from bit or vice versa.

BORING-MACHINE OPERATOR, MULTIPLE SPINDLE 6-33.412 Sets up and operates either a horizontal or vertical multiple spindled boring machine to bore two or more holes simultaneously in wooden parts to prepare them for assembling: inserts and tightens bits in chucks of machine; measures and marks stock for boring or follows markings of LAY-OUT MAN; clamps stock to table and centers bits over or in front of marks indicating location of holes; adjusts spindle stop on each spindle to regulate depth of holes, and starts machine; moves table, bearing stock, upward or forward into rotating bits to bore the holes; withdraws stock from bits. May be specifically designated according to type of machine operated, such as CLUSTER-BORE OPERATOR: GANG-BORE OPERATOR.

BORING-MACHINE OPERATOR, VERTICAL 6-33.411 Sets up and operates a vertical-single-spindled boring-machine to bore holes of specified diameter and depth in wooden parts: fits bits into chuck of spindle and tightens chuck jaws with wrench; turns handwheel to adjust table height, and starts machine; places and holds board on table, centering it under bit, and pulls on lever or presses on pedal that lowers and feeds rotating bit into board; releases pressure on lever or pedal, allowing bit to be withdrawn and removes bored board from machine.

BORING-MILL OPERATOR 4-78.041. Performs such operations as drilling, boring, and facing on metal objects with boring mill (m), a machine designed to make circular cuts in metal: clamps or bolts work to table or faceplate of machine; inserts appropriate cutting tools in machine and adjusts their position; starts machine, turns handwheels to control the action of cutting tools, engages automatic feed, and observes section of machine; stops machine and measures work with micrometers, gages, calipers, and scale to be sure machine work is carried out to prescribed dimensions; lubricates machine.

BOX MAKER, WOOD II 8-93.77. A LABORER PROCESS. Nails out-to-size boards together to form shipping boxes or crates, using a hammer or a box-nailing machine.

BOX MAKER, WOOD III 6-39.114 Cuts lumber to size, as shown by sketch or requisition, using a hand-driven or power-driven saw, and nails the pieces together to form shipping boxes or crates.

BRAKE OPERATOR, HAND 6-94.206 Operates a hand brake (m) to make angular bends in flat pieces of sheet metal; installs and locks proper die in brake; sets metal blank on die against stop; operates lever to clamp blank in machine; operates lever to bend metal to form of die; releases lever and removes bent piece from machine.

BRAKE-OPERATOR HELPER, MACHINE (sheet metal) A LABORER, PROCESS. Performs duties of lesser skill to assist in making bends in sheet metal: helps to install stops on machine brake; places parts to be processed on machine table; oils dies to prevent parts from sticking together.

BRAKE OPERATOR, MACHINE II 6-94.207 Operates a machine to make longitudinal or transverse angular bends in sheet metal; installs and locks proper forming dies in machines; inserts edge of sheet on table until line bend is alined with clamp head; steps on pedal or operates lever to clamp stock to machine; sets and locks guide bar to edge of stock and sets bending stop to desired angle; operates lever to raise apron of machine against stock to bend it to desired angle; releases lever and pedal and removes bent piece from machine; checks bend for accuracy, re-adjusts set-up as necessary, and makes bend with corrected set-up. May bend edges of stock through 180 degrees to form folds for joining two pieces of stock together.

BRINELL-HARDNESS TESTER 4-87.910. A term applied to HARDNESS INSPECTOR when determining the hardness of pieces of metal by the Brinell method; places piece on table of machine and causes machine to press an accurately made steel ball against the test surface with a specified force; removes test piece from machine, measures indentation made by steel ball with a special (measuring) microscope, and determines the hardness number of the sample from a chart that expresses hardness in terms of the diameter of the impression produced under standard test conditions.

BRIQUETTE-MACHINE OPERATOR 9-65.64. A LABORER. A BALING-MACHINE OPERATOR (any ind.) who compresses metal waste, such as cutting chips into small bales (briquettes) with a power-driven baling machine: loads waste material into chamber of baler (m) by hand or using a shovel or fork; closes switch or turns valve, causing a ram to descend and compress the material into a briquette; releases pressure, lifts out briquette, and places it on a pile.

BROACHER, HAND 4-75 Broaches (shapes internal surfaces) metal parts by hand methods: (I) places hand broaching tool into opening and strikes it with a hammer to drive it through opening and cut away metal to shape of tool: (2) alines opening in part with machine ram on table of manually operated press (m) which is equipped with a broaching tool; pulls down on lever to force tool through opening, thus cutting out the metal to the shape of the tool. A task performed by a MACHINIST, BENCH.

BROACHING-MACHINE OPERATOR 6-78.051 Operates a machine that broaches (cuts away metal) external or internal surfaces of metal parts to accurate dimensions: lifts part by hand or hoist onto machine table and fastens it in place, usually with a special fixture; bolts or clamps broaching tool onto ram of machine; starts machine and moves lever, causing ram to descend and push or pull tool over part and cut it to desired shape, or causing table to move part past tool. Machine may be set up by JOB SETTER III. May be specifically designated according to type of machine, as HORIZONTAL-BROACHING-MACHINE OPERATOR; VERTICAL BROACHING-MACHINE OPERATOR.

BROKEN-ARM-DRILL-PRESS OPERATOR (mach. shop) A SINGLE-SPINDLE-DRILL-PRESS OPERATOR who drills vertical or diagonal holes with a drill press designed so that the arm may be bent to direct the drill at angles within a certain range.

BRUSH HAND I 7-16.520. Paints parts which are not otherwise painted by dipping or spraying, using paint brushes.

BUCKER-UP IV 6-95.080**. A term applied to a RIVETER, AIRCRAFT; RIVETER, HAND IV; OR RIVETER, PNEUMATIC III when bucking rivets: places end of bar against rivet inserted in the hole and resists force of hammer to spread the rivet; examines formed rivets for imperfections. May remove defective rivets by drilling out the shank with a portable electric drill.

BUFFALO-ROLLS OPERATOR 6-94.215** A FORMING-MACHINE OPERATOR IV who shapes airplane sheet metal stock into desired forms, such as angles and channels, using a machine known by the trade name Buffalo Roll.

BUFFER I 6-77.020 Polishes metal and hard composition objects to a high luster by holding the objects against a rapidly rotating soft wheel, such as cloth or leather, to which buffing rouge, lime, wax, or other polishing compound has been applied loosely. May use a series of abrasive wheels of varying degrees of fineness to remove deep scratches and blemishes in preparing object for final polishing on soft wheel.

BULKHEAD MAN 7-03.552**. A SUBASSEMBLER II. A SMALL-PARTS ASSEMBLER III who assembles airplane fuselage bulkheads from prefabricated parts.

BUMPER IV 4-80.010 A SHEET-METAL WORKER II who fashions sheet metal into odd shapes, according to specifications shown on blueprints, using a hammer and specially shaped metal anvils (dollies), or a powered hammer-machine and metal dies.

BUMPER OPERATOR I 6-94.221 Shapes sheet metal according to specifications or removes wrinkles and other irregularities from previously-formed sheet-metal parts, using a machine equipped with a reciprocating hammer; changes dies of machine according to the surface contours and the thickness and hardness of metal to be shaped or smoothed, and adjusts eccentric drive arm of machine to regulate the force of the striking hammer; lubricates surfaces of part; holds and moves part under the rapidly reciprocating hammer to shape or smooth the surfaces as required, assisted by BUMPER-OPERATOR HELPER when shaping or smoothing large sheets; hammers metal partially formed by machine to specified dimensions, using various hand hammers.**

BUMPER OPERATOR HELPER 9-03.01** A LABORER, PROCESS. Assists BUMPER OPERATOR I to shape or smooth sheet metal according to specifications; changes dies of machine as instructed; holds and manipulates one end of large sheets of metal in the machine as directed; cleans and oils machine when necessary.

BURNISHER AND BUMPER 6-77.340** Removes dents, scratches, and other surface defects from sheet metal parts; lubricates area to be burnished, using light oil; shapes the metal to remove the surface defects by rubbing with a burnishing spoon and at the same time, backing the surface with a dolly bar, burnishing hammer, or lead shot bag; taps out dents with a burnishing hammer; polished surfaces with a mild abrasive; installs new pieces of skin when area cannot be burnished, drilling rivet holes with a portable electric drill.

BURNISHER, HAND 6-77.320 Polishes those parts of metal objects that cannot be polished on a buffing or polishing wheel (m) selects properly shaped burnishing tool: dips blade of tool in soapy water and rubs blade on part to be polished, exerting sufficient pressure to polish the article without scratching or marring the surface; keeps burnishing tools in good condition by rubbing the blades, first in fine-powdered emery to remove scratches and then in buffing rouge to polish them.

BURNISHING-MACHINE OPERATOR 8-93.77 Polishes metal objects, that are too small to be polished on a buffing wheel (m), by means of a mechanically rotated, watertight drum partly filled with soapy water and small steel balls (shot) into which the objects are dumped and tumbled about until polished; tilts barrel to discharge contents onto sieve where objects are separated from the steel shot and soapy water; rinses objects by dipping them into clear water.

BURRER, HAND 6-77.510 Removes burrs and rough edges from machined metal parts: lifts parts by hand or hoist onto bench or into bench vise; clamps part into vise; removes burrs and rough edges, using hand files, hammer and chisel, and brace with burring bit; may use power-driven burring brush for the inside of housings and other inaccessible to hand tools; inspects work visually and tactually.

CABINET-ABRASIVE-BLAST MAN 6-82.720 A SANDBLASTER I who places castings in cabinet, directs air and sandblast against surface of castings, and observes cleaning action through window in cabinet; when castings are clean, cuts off sandblast and removes castings.

CABINETMAKER (I) (woodworking) assembly man, bench work; cabinet-frame assembler; carpenter, bench; top-bench hand. 4-32.100 Performs the hand carpentry necessary to cut, shape, and assemble prepared parts of high grade articles of furniture, such as store fixtures, office equipment, and home furniture; studies drawing of article to be made; lays out outline or dimensions of part on paper or stock lumber specified; operates such woodworking machines as band saw, jointer, mortiser, tenoner, molder, gainer, and variety machine to cut and shape parts from stock, or may obtain parts already prepared by other workers; trims component parts of joints to make them fit together snugly, with hand tools, such as plane, chisel, or wood file; bores holes for the insertion of screws or dowels, by hand or machine; daubs glue on joints with brush; fits parts together tightly until glue is dry; drives nails, dowels, or screws through joints to reinforce them; glues and fits subassemblies and other parts together in clamps to form completed unit; finishes surfaces and joints of article with sandpaper and hand scrapers. May install such hardware as hinges, catches, or drawer pulls. May work on either a production line or on special orders.

CABLE SPLICER I 7-89.051 Joins the ends of wire cables, used in cranes (m), hoists (m), or for other purposes, by interweaving the strands making up the cable.

CABLE STRETCHER (aircraft mfg.) Stretches control cables to eliminate stretch and test terminals: screws terminals into fixtures and attaches one fixture to a large tension spring and other fixtures to a draw bar, threading cable over a pulley at one end of the cable stretching machine. Turns wheels at end of draw bar to tighten cable to specified tension as indicated by a pointer moving along a scale above tension strain. Sets sand timer in position and waits until sand has run from upper to lower part of timer. Releases tension and removes cable coiling it and placing coil on a rack above cable stretching machine. This may be a task of a WIREWORKER.

CABLE SWAGER 7-89.053**. Cuts airplane control cables to specified lengths and shrinks fittings onto the cable ends: cuts cables to size on a cable cutting machine; smooths the cable ends, using an electrically operated abrasive wheel; marks the cables at the point to which they should be inserted into the fittings, using a paint block and spray gun; slips the fittings over the cable ends and crimps them in place with a vise; sets up dies in a swaging machine, and swages the fittings to the cables by passing the terminals through the swaging dies; wraps linen cord or twine (serving) around the junctions between fittings and cables and tests the tensile strength of the completed cables, using a special testing device known as a proof loading machine.

CABLE-SWAGER HELPER; swaging-machine-operator helper (aircraft mfg.). A LABORER, PROCESS. Performs duties as described under HELPER III.

CADMIUM PLATER 4-74.010 Covers metal objects electrolytically with a coating nickel, gold, or other metal that can be guffed and polished to a bright and relatively rust-proof finish; cleans objects by immersing them in a succession of cleaning baths.

CALCULATING-MACHINE OPERATOR 1-25.13. Presses proper keys on keyboard and manipulates certain levers to operate a machine that automatically performs the basic arithmetic computations of adding, subtracting, multiplying, and dividing. Through correct operation may also perform other computations, such as taking the root of a number to a power. May calculate or check the figures on such records as inventories, financial accounts, payrolls, balance sheets, invoices, discounts, sales, and statistical reports. Reads the answers from a series of figures at the bottom or top of the machine. Machine may be electrically or manually powered.

CANOPY ASSEMBLER 7-77.050**. Assembles plastic glass canopies which fit over airplane cockpits, using prefabricated metal and plastic parts: fits preformed metal skeleton and precut and shaped plastic glass panels in jig, trimming away excess metal and plastic with knives, files, saws, and snips; drills holes in framework and inserts and spreads rivets; installs plastic glass in framework, inserting rubber cushioning strips where it makes contact with the metal frame; cuts off excess rubber with a knife, and removes protective paper from plastic panels.

CAPPER AND BANDER 9-03.01** Covers ends of fittings and tubing with either cellophane sheets or ready-made cellulose caps to prevent the entry of foreign matter and to protect the threads on fittings; paints colored hands on tubing, by hand, for identification purposes.

CAR UNLOADER I 9-03.01 A LABORER. Unloads material, merchandise, equipment, or other items from trucks by hand, sometimes using skids, bars, jacks, hand hoist, chutes, hand trucks, and similar equipment. Sometimes specifically designated according to material unloaded, as glass unloader; lumber unloader.

CARBURETOR MAN I; 5-80.300 Adjusts and repairs aircraft engine carburetors and gas filters: adjusts air and gas supply, so carburetors wil function efficiently, by turning adjustment screws on carburetors; dismantles defective carburetors, using wrenches, screw drivers, and other hand tools; cleans parts with rag or brush and gasoline, or other cleaning fluid; examines parts carefully for defects; tests needle valves by visual inspection or by wire gages; reassembles carburetors, replacing defective parts with new ones; adjusts air and gas supply after carburetors have been installed on aircraft; shortens or lengthens throttle rods for correct operation of carburetor or replaces throttle assembly with new one, if these duties are not done by AIRPLANE MECHANIC.

CARPENTER, MAINTENANCE 5-25.830. Performs the carpentry duties necessary to construct and maintain in good repair structural woodwork and equipment in an establishment, performing such duties as making and repairing counters, benches, partitions, doors, floors building framework; uses rules, saws, hammers, braces, and bits and other carpenter's tools.

CASTING INSPECTOR 6-82.920. Inspects finished products for defects and imperfect workmanship; marks product to indicate any chipping or grinding desired; checks dimensions of product with specifications; keeps records of items inspected.

CEMENTER (aircraft mfg.) Cements materials as rubber, felt, wood, or other composition to parts such as metal doors, glass and plastic windows, container panes, and port holes. Cleans parts thoroughly with solvent before cementing and places weighted bags on completed assemblies until cement sets. Spaces material accurately, measuring with a steel rule.

CENTER-SECTION ASSEMBLER 6-33.925** An AIRPLANE WOODWORKER II who specializes in assembling wooden center sections of airplane fuselages from prefabricated parts.

CENTER-SECTION ASSEMBLYMAN 5-03.552**. A MAJOR ASSEMBLER. An ASSEMBLYMAN VIII who specializes in assembling the component elements of the center fuselage section of an airplane.

CENTERING-MACHINE OPERATOR 6-78.152 Drills holes which are used to engage hardened centers and thus support cylindrical metal objects in machines, using a special drill press that locates the holes on the center line of the cylinders automatically: turns a crank or hand wheel to open chucks on machine, places part in chucks and tightens chucks; selects centering drill for the spindle (or spindles if double end machine) and clamps it in place; moves spindle assembly along bed until it is in position for center drilling work of the length at hand and clamps assembly to bed; turns on electric motor and moves hand feed lever or engages automatic feed to drill the center holes.

CENTERLESS-GRINDER OPERATOR 6-78.511 Adjusts and feeds an automatic cylindrical grinding machine that grinds cylindrical objects by rolling them between the rims of two abrasive wheels: selects and bolts in place appropriate abrasive wheels; turns handwheels to adjust spacing between rims of wheels; moves levers to select appropriate speeds for each wheel; clamps feed guide in position to guide work into position between wheel rims, and clamps tail guide in position to receive work from between wheel rims; starts machine and feed work onto feed guide or keeps hopper filled with objects that are automatically fed. The adjustment of the machine may be done by a JOB SETTER III.

CENTERLESS-GRINDING-MACHINE OPERATOR, AUTOMATIC 9-02.01. A LABORER, PROCESS. Operates two or more automatic machines that rough-grind and finish-grind the external surfaces of small parts, such as piston pins, rocker arm shafts, and bushings: starts machines; places small parts by hand into hopper from which they automatically feed to grinding wheels; removes containers into which parts are ejected.

CHANNEL-AND-BULKHEAD MAN 4-80.060**. A SHEET-METAL WORKER, AIRCRAFT II who specializes in shaping and assembling duralumin airplane cockpit cowling parts (channels) and fuselage bulkheads.

CHARWOMAN 2-82.10. Keeps premises of a public building, office, commercial establishment, or apartment house in clean, orderly condition: sweeps floors, disposes of waste or litter; scrubs floors; polishes metal fixtures and fittings. Frequently works in evening, after daytime employees have left the premises.

CHAUFFEUR II 7-36.010. Drives an automobile used for transporting office personnel and visitors of a commercial or industrial establishment, for carrying mail to and from post office, and for running miscellaneous errands; cleans automobile and makes minor repairs and adjustments.

CHECKER 4-78.675**. Examines fabricated sheet-metal parts for conformity to specifications; determines that specified metals have been used in fabricating parts, utilizing his knowledge of the appearance of metals and any identifying markings stamped on the metal by the shop; measures thickness (gage) of the sheet metal with micrometers; checks contour of part and location of drilled holes by super imposing template on part; measures diameter of holes, using a special scale; marks or reports defects for correction. May correct minor defects, using a metal scraper and hand files.

CHECKER, MATERIAL TEST (aircraft mfg.) Inspects purchased metal parts previously tested for hardness and quality of raw materials to determine whether they meet specifications: compares metal hardness test reports with specifications to detect discrepancies and returns unsatisfactory parts for further hardness testing; refers discrepancies of specifications with purchase order of raw materials to purchasing department for disposition; requests hardness tests of raw materials if specified in purchasing order; affixes approval stamp on satisfactorily inspected parts and raw materials, using rubber stamp and ink pad.

CHECKING-CLERK (IV) (aircraft mfg.); preparation mechanic; preparing mechanic; preparing clerk. A SHIPPING CHECKER I who examines shipments of airplane parts entering production and assembly departments by laying out and marking parts with identification tags; keeps records of the progress of parts through the departments to insure completeness of shipping orders. May grease metal surfaces to prevent rusting during transit and make minor adjustments, such as tightening nuts and bolts.

CHIEF CLERK I 0-97.13. Coordinates the clerical work of an establishment, and directing the performance of such intra-establishment services as the keeping of personnel and time records, circulating memoranda to departments, standardizing operating procedures for clerical work, purchasing, recording, and keeping inventories of clerical supplies and equipment, and making up pay rolls. May direct the work of several subordinate MANAGERS, OFFICE.

CHUCKING-MACHINE OPERATOR, AUTOMATIC, 6-78.021 A TURRET-LATHE OPERATOR, AUTOMATIC (mach. shop) who tends a machine that drills, faces, chamfers, and reams metal parts, such as water pump impellers, fly-wheels, timing gears, and wheel cylinders: lifts part by hand or hoist and fastens it in chuck which holds it in exact alinement with cutting tools that have been set up to perform the desired operations by a JOB SETTER I; starts machine and allows it to run until it has automatically performed the sequence of operations for which it is set; removes part and places it on a hand truck or conveyor.

CIRCLE-SHEAR OPERATOR II 6-94.233** Cuts out blanks from sheet metal of a lighter gage than that cut by CIRCLE-SHEAR OPERATOR I, according to markings for fabrication into engine exhaust stacks, pipes, and other airplane parts, using a circle-shear machine; lists sheet metal into position level with circular cutters of machine; starts machine and guides sheet metal into cutters along lay-out markings.

CIRCULAR-RIPSAW OPERATOR 6-33.211 RIPS boards to desired width on a sawing machine equipped with a circular saw the teeth of which are sharpened and set to cut along the grain of the wood, performing duties similar to those of BAND-RIPSAW OPERATOR.

CIRCULAR-SAWING-MACHINE OPERATOR 6-78.612 Cuts metal stock to specified length, angle, and bevel with a power-driven circular saw (m); measures work and marks line of cut with chalk or scriber; adjusts position of work on table and tightens clamp; starts machine; turns handwheel or engages power feed to feed work against saw; may set a nozzle in position to direct a stream of lubrication liquid over the saw out; observes operation of machine and stops it to remove work when cut is completed.

CLAY MODELER 5-17.248. A PATTERNMAKER XI who builds clay patterns for use in making sand moles.

CLEAN-UP MAN VII 7-03.552**. A SUBASSEMBLER II. Finishes aircraft subassemblies such as rudders, fins, ailerons and wing-tips: trims away the excess metal from the edges of the parts, using metal snips, and smooths the ends with filesand emery paper; installs hinges and other fittings on units, using a portable electric drill to drill the necessary bolt holes; completes the fabrication of the parts by hammering them into the desired shape; drills any rivet holes which are needed for future operations; removes wrinkling and other skin defects. Usually specifically designated according to the part worked on, as aileron-clean-up man; elevator-clean-up man; rudder-clean-up man; wing-tip-clean-up man.

CLEAN-UP MAN VIII 5-03.572**. A MAJOR-ASSEMBLY INSTALLER. A FINAL ASSEMBLER I who inspects airplanes in the last stage of final assembly, repairing defective parts, substituting new assemblies for unsatisfactory ones and installing any parts, such as doors and seat covers, which had been omitted in previous operations.

CLEANER (electroplating) 8-64.10 Facilitates the work of PICKLING OPERATOR (any Ind.) by wiping most of the grease from metal objects and wiring a number of them together so they can be handled easily during pickling and plating operations.

CLEANER (mach. shop) 9-65.64 A LABORER. Cleans up chips and metal shavings cutoff during various machine processes, with a broom and shovel; transports material to scrap bin in a wheelbarrow or hand truck or to machine for separating ferrous metal from brass.

CLERK, GENERAL 1-04.01. A classification title for the clerical jobs, requiring little or no previous training, which involve the performance of routine clerical duties, such as addressing envelopes, keeping simple records, and gathering and delivering messages and assisting in operating office machines, and which may require the ability to do simple typing.

CLERK, GENERAL OFFICE 1-05.01. Depending upon the size and type of office, performs any combination of the following or similar clerical duties: makes up and files reports; tabulates and posts data in various record books; takes telephone orders; checks cash registers; gives information to callers; sends out bills; checks calculations; keeps a small set of books.

COCKPIT-COWL ASSEMBLER 4-80.060**. A SHEET-METAL WORKER, AIRCRAFT II who specializes in fabricating and assembling complete duralumin cockpit cowlings. May use cockpit cowling parts which have been previously shaped by other workers.

COCKPIT-COWL-SKIN MAN 4-80.060**. A SHEET METAL WORKER, AIRCRAFT II who specializes in shaping the skin which is later installed around the cockpit rim.

COCKPIT-COWL-TRIM MAN 7-03.562**. A SUBASSEMBLY-INSTALLER II. A TRIMMER I who specializes in installing sponge rubber padding and leather covering on cockpit-cowlings and cockpit seats of small aircraft.

COLBURN-DRILL-PRESS OPERATOR 6-78.083 A SINGLE-SPINDLE-DRILL-PRESS OPERATOR who sets up and operates a large drill-press known by the trade name of Colburn to perform drilling, reaming, and tapping operations on heavy metal parts to blueprint specifications.

COLOR TABBER; color bander (aircraft mfg.) A LABORER, PROCESS. Attaches identifying colored bands to airplane cables: determines from specifications which color to attach to individual cables; selects properly colored cellulose tabs and wraps them about cable ends; covers tabs with a coat of colorless lacquer applied with a brush.

CONTRACT-CHECKING CLERK (aircraft mfg.) Determines location and availability of production tools: compares aircraft production orders with master file records to determine location of tools requested; requests a written authorization for the fabrication of unavailable tools included in the order; locates new uninspected tools and forwards to the appropriate department for approval; assembles tools requested and sends them to appropriate department; keeps a record of transactions.

CONTROL-CABLE INSPECTOR 7-89.055. Inspects airplane cable assemblies; measureslength of cables; examines cables for kinks, flaws, and cracks in the strands; inspects spliced and swaged cable ends for satisfactory workmanship, and examines cable fittings, such as pins and trunbuckeles, for defects in the metal and loose connections; verifies cable fittings against blueprint specifications by number; marks points on cables to facilitate installation, using a brush and paint. May make minor adjustments to cables to bring them up to specifications, such as tightening fittings and cutting off protruding strands.

CONTROL-SURFACE ASSEMBLY MAN; control-surface assembler (aircraft mfg.) A SUBASSEMBLER II. A SMALL-PARTS ASSEMBLER III who assembles airplane control surfaces, such as ailerons, rudders and elevators, using prefabricated parts. Sometimes specifically designated according to the part assembled, as AILERON ASSEMBLER; ELEVATOR ASSEMBLER; RUDDER ASSEMBLER.

CONTROL-SUFACE COVERER 5-03.010**. An AIRPLANE COVERER who covers airplane control surfaces, such as rudders and elevators, with fabric.

CONTROLLER 0-01.70. Supervises the financial affairs of an industrial concern, education establishment, charitable institution, or any city, state, or national government; authorizes and controls the disbursement of all monies by TREASURER; directs the keeping of accounts and records; analyzes the accounts and records and prepares statement for directors or legislative body concerning the financial condition of organizations, the expenditures for salaries, overhead, and indebtedness, and the costs of production or operation; develops and recommends specific policies regarding the financial problems of the organization. May act as TREASURER.

CONTROLS ASSEMBLY MAN (aircraft mfg.) A SUBASSEMBLER II. Assembles the control sticks by which airplane control surfaces are operated, using prefabricated parts: assembles and clamps together sheet-metal housing of stick, trimming off excess metal with snips and files, and drilling rivet holes as necessary; rivets housing together, ref. RIVETER, PNEUMATIC III; installs in housing sprocket gears and sprocket chain which connect stick to main control column.

CONVEYOR MAN II 7-88.240. Starts, stops, and regulates the speed of conveyor systems by operating switchboard; adjusts, lubricates, and repairs conveyor systems.

CORRUGATION ASSEMBLER (aircraft mfg.) A SUBASSEMBLER II. Assembles panels of corrugated sheet metal in jigs prior to their installation on wings by CORRUGATION INSTALLER: places numbered pieces of metal in a jig at correspondingly numbered spaces, overlaps edges, measures margins with instruments, such as calipers and scales, and trims as necessary with band saw and file; clamps a framework over assembled panel in jig and, using framework as a guide, corrects irregularities in overlapping edges by pounding with a wooden mallet and inserting wooden wedges; positions for subsequent riveting, formed metal reinforcements over seams and openings and metal plates over edges to provide means of connection to wing structure; drills and reams rivet holes, guided by predrilled pilot holes, and using an electric hand drill; secures parts with spring fasteners prior to riveting. May be specifically designated according to degree of proficiency acquired, as corrugation assembler, class a; corrugation assembler, class b; corrugation assembler, class c.

CORRUGATION INSTALLER (aircraft mfg.) A SUBASSEMBLY INSTALLER I. Installs preformed panels of corrugated sheet metal to wing framework over which skin is subsequently fitted: attaches panels to jigs suspended over wing; sets wooden braces into corrugations to prevent sagging; positions panels, guided by measurements on jigs and framework, and establishes margins by use of a machinist's scale; marks centers of corrugation crests with crayon-coated metal strip to indicate location of rivet holes; drills rivet holes in panels and frame members with an electric hand drill and temporarily secures parts with bolts prior to riveting; trims excess metal with electrically-powered snips. May be specifically designated according to degree of proficiency acquired, as Corrugation installer cl. a; corrug. inst. cl. b; corrug. inst. cl. c.

COST CLERK II 1-01.35. Computes the cost of production or selling goods or of operating a working unit or group of working units: selects records, such as time sheets, pay rolls, operation charts or schedules, materials records, production sheets, and other data showing information necessary to make calculations; calculates individual items, such as labor cost, material cost, and overhead expenditures. May make up a composite report showing total cost, selling price, and profit. May operate a calculating machine, and an adding machine.

COUNTERSINK OPERATOR 6-78.083. A SINGEL-SPINDLE-DRILL-PRESS OPERATOR who enlarges or chamfers the edge of a hole already drilled so that a screw or other part set into the hole will fit flush with the surface.

COWLING-INSTALLATION ASSEMBLER 5-03.554**. A SUBASSEMBLER III. A FITTING MAN who fits together and installs sheet-metal cowlings used to cover and streamline parts of an airplane, such as the engine, landing gear, and parts of the fuselage: drills holes for screws, rivets, and bolts, using an electric hand drill; removes dents and shapes areas of the metal using a rawhide hammer and smoothly curved steel blocks; bolts, screws, and otherwise attaches cowlings to the airplane.

COWLMAN I 4-80.050. A SHEET-METAL WORKER, AIRCRAFT who forms metal motor cowls by pounding sheet-metal over a wooden form with a rawhide hammer, and shaping with bumping tools and dies.

COWLMAN II 4-80.060**. A SHEET-METAL WORKER, AIRCRAFT II who specializes in fabricating and assembling duralumin airplane parts (cowlings or fairings) which cover and strengthen the junction between the fuselage and the tail, or which are mounted around the engine. May be specifically designated according to the parts worked on, as cowlman, coding cowl; cowlman, engine cowl.

CRANE FOLLOWER 9-65.43. Assists CRANE OPERATOR: affixes rope cable, or chain slings (or other grappling equipment) to object being lifted; signals CRANE OPERATOR that load is made fast to crane cable hook, and follows load to point of destination; signals where and when to lower load so as not to injure employees or equipment, pushing and pulling load as it is being lowered until it is deposited in the desired place and position; removes grappling equipment. When working with locomotive, locomotive crane shifts cars about yard.

CROWNING-HAMMER OPERATOR 6-94.221**. A BUMPER OPERATOR I who shapes and smooths sheet-metal airplane parts with a power hammer known by the trade name Crowning Hammer.

CROWNING-MACHINE OPERATOR 6-94.234**. Forms by machine sheet-metal blanks into crown and dome shaped airplane parts according to specifications; adjusts machine to secure the pressure necessary to shape the part by adding or removing weights to machine shaft and counter-balance; positions rubber mat under sheet-metal blank on machine bed; manipulates the controls to start the pendulating motion of a heavy ball attached to the shafts that the ball swings back and forth across the surface of the metal; moves the metal about under the ball to produce the desired shape; verifies contours of finished parts by comparing them with a pattern.

CUT-OFF-SAW OPERATOR, TREADLE-OPERATED 6-33.214 Operates a treadle cut-off saw (m) to cut wooden stock to desired length: adjusts end stops on table to length of board desired; starts circular saw; places end of board against end stop and over slot in table; presses pedal, raising revolving saw through slot and into lumber.

CUT-OFF-SAW SET-UP MAN; set-up man (aircraft mfg.) Installs saw blades in a cut-off (circular) saw and adjusts feeding guides: selects and bolts saw blade in place on axle; adjusts table on which material to be cut rests so that desired angle of cut can be obtained; bolts guides to saw table; clamps auxiliary fixtures to table; gives directions for sawing metal parts.

CUTTER, HAND III 4-62.020. Cuts leather or imitation leather, according to pattern, for use in upholstering or trimming automobile bodies, for making harness and saddles, or for making garments, using leather cutting tools and so arranging the cutting as to secure the maximum of parts with a minimum of waste. Usually specifically designated, as COLLAR CUTTER, HAND II: HARNESS CUTTER: SWEAT-BAND CUTTER.

CUTTER, HAND XV (aircraft mfg.) cutter, soundproofing. Cuts soundproofing material for installation in airplanes: traces outlines of templates on asbestos soundproofing material; cuts along marked lines with scissors and a knife; dips edges of cut pieces in a rubber cement solution to prevent raveling; hangs pieces on racks to dry. May cover airplane parts, such as tanks and exhaust manifolds.

CUTTER, MACHINE I 6-27.054. Guides an electrically powered cutting machine, which cuts through many layers of fabric, along chalk lines or around pattern pieces to cut identical parts of garments, upholstery, hats, and other articles; uses an electric drill to make small holes through piles up material to mark location for attaching other parts, or to indicate pieces to be cut out by others; frequently piles material and arranges patterns so as to have the least waste, marking lines around material with chalk.

CYLINDRICAL-GRINDER OPERATOR I 4-78.511. Grinds external cylindrical, tapered, or conical surfaces with a machine that finishes metal with an accurately controlled abrasive wheel: selects abrasive wheel of appropriate size, shape, and abrasive quality and fastens it on spindle of machine; fastens work between centers of machine; adjusts speeds of rotation of work and abrasive wheel and rate at which wheel is fed into or along work by moving levers; turns on motor; starts machine, and turns handwheel to bring abrasive wheel into contact with work; observes operation of machine; stops machine and measures work; removes work from machine when completed. May dress or true the abrasive wheel by feeding it against a diamond.

CYLINDRICAL-GRINDER OPERATOR II 6-78.521* Finishes cylindrical, tapered, or conical metal surfaces on a cylindrical-grinding machine, performing simple, repetitive, precision-grinding operations, as contrasted to the CYLINDRICAL-GRINDER OPERATOR I who is capable of performing a variety of complicated grinding operations, using the same machine: mounts workpiece in holding device; feeds grinding wheel into workpiece using automatic device or hand wheel, or where automatic machines are used; observes machine operations, frequently tending several machines; removes work when completed; gages, cuts, using micrometers, calipers, and verniers. May make simple set-ups, although this is frequently done by another worker, usually a JOB SETTER II.

DECAL APPLIER 7-89.351. Applies designs to painted surfaces by the transfer process; pastes decalcomania print (a paper on which designs are printed for transfer printing) to varnished or glued surface; rolls print smooth with a hand roller; removes outer layer of heavy paper; wets inner layer and removes thin paper; allows design to dry; varnishes over design. May cut design from paper containing several designs.

DEGREASER 8-74.10**. A PICKLING OPERATOR who removes grease and other oily deposits from metal parts, preparatory to electroplating: inspects tank to determine that it contains a sufficient amount of chemical solvent and adds solvent as necessary; starts machine to heat the coils at bottom of tank so that solvent will boil and give off fumes; places objects on racks or in wire baskets and positions them in the center of tank so that the chemical fumes will dissolve the grease and oil; removes racks or wire baskets from machine when cleaning process is finished.

DETAIL ASSEMBLER I 7-03.542**. A classification title for jobs which involve the assembly of small and simple aircraft parts (detail assemblies) and equipment, such as ribs, fuel tank parts and junction boxes.

DETAIL ASSEMBLER II 5-03.540**. A classification title for jobs involving the assembly of precision airplane units, such as hydraulic controls, fuel and oil units, and instruments. Classified under this title are the following occupations: FUEL-AND-OIL UNITS ASSEMBLER: HYDRAULIC-CONTROL-UNIT ASSEMBLER: HYDRAULIC STRUT ASSEMBLER.

DETAIL ELECTRICAL ASSEMBLER 7-00.938**. Assembles electrical junction boxes for installation on airplanes: measures and cuts insulated wires of a specific size and kind, using a wire cutter or pliers; tapes fittings on the ends of the wires ; threads the wires through conduits and solders the ends to a plug; laces together the wires protruding from the open end of the conduit; wires parts, such as switches, meters, light sockets, and terminal panels, using an assembly sketch as a guide; attaches fittings to junction boxes, using nuts and bolts, inserts wires through openings into box and connects them to specific parts; connects wired junction box to testing appraratus and verifies wiring by connecting the box to testing lights.

DETAILER II 0-48.01. Makes detailed drawings of parts of machine or structures from rough or general design drawings: shows dimensions, material to be used, and other information necessary to make the detailed drawing clear and complete; makes tracing of finished drawing on semi-transparent paper from which blueprints can be made.

DEVELOPMENT PLANNER (aircraft mfg.) A LIAISON PLANNER who specializes in planning sequence steps for maximum efficiency in the installation of detail parts and assemblies for airplanes.

DIE CLEANER AND POLISHER 4-76.030**. Cleans, grinds, and polishes cast metal dies; blows superficial dirt from dies with an air hose; trims rough outer sections, using a pneumatic shipping hammer and acetylene cutting equipment; smooths die surface with a portable grinder, verifying contours with straight edges; drills and grinds out defective surfaces, hammering or soldering metal into cavities; polishes dies with emery cloth.

DIE DESIGNER 0-48.42. Makes drawings of dies necessary to form a complete stamping, forging, or other part; decides on the number of sets of dies (each set representing a stage of development of the part to be made) necessary to change the metal blank into the finished piece, basing his decisions on a blueprint of the finished part and on his knowledge of dies, machines, their possiblities and limitations; uses drafting tools to make scale drawings of each set of dies; compares blueprints with wooden patterns of dies to determine if corrections, changes, or improvements should be made in patterns.

DIE FINISHER 4-76.010. A DIE MAKER II who smooths and finishes the surface of dies after they have been cast, heat-treated, or machined, filing, scraping, grinding the dies and fitting multiple-part dies together.

DIE FINISHER HELPER 9-03.01. A LABORER, PROCESS. performs duties as described under Helper III.

DIE-INCREMENT ANALYST; (aircraft mfg.). Determines exact sizes of dies from templates in preparation for stamping and forming sheet-metal parts for airplanes: measures and compares dimensions of templates with those of dies, using finely calibrated scale; records information, such as length and width of die-blank required, tolerances, direction of bends, and gage of material on special forms; routes the forms and templates to shop for cutting the die-blanks; stores templates, specifications, dies, and blueprints for future use, using an index file. May route dies from storeroom to stamping department.

DIE MAKER II 4-76.010. Specializes in the construction, repair, and maintenance of dies for forging, punching, stamping, or other metal forming work.

DIE-MAKER APPRENTICE I 7-94.110**. Performs duties as described under APPRENTICE I.

DIE SETTER I 4-76.120. Sets up dies in bulldozers, drop hammers, power brakes, power presses, and other forging machines, and adjusts them to normal operation; removes used dies from machine by unscrewing bolts, and cleans scale or dirt from bed with a brush; selects proper dies and lifts them to machine by hand or hoist; bolts upper (male) die to movable clock and lower (female) die in approximate center of bed or anvil of machine, using wrenches; lowers male die to a point just above the female die and adjusts the latter until the raised impression on the male fits exactly in the corresponding depression in the female; clamps female die in place by tightening nuts and adjusts length of stroke of male die; operates machine to forge a few trial pieces, inspects them, makes adjustments, and turns machine over to operator.

DIE SETTER, DROP HAMMER 4-76.120. A DIE SETTER I who sets up and alines the dies in a drop hammer which is used to forge heated metal parts into desired shape.

DIE-SETTER HELPER 9-03.01**. A LABORER, PROCESS. Performs duties as described under HELPER III.

DIE-SETTER, PUNCH PRESS 4-76.120**. A DIE SETTER I who sets up and alines the dies in a punch press to shear, form, draw, assemble, or squeeze metal parts into shape or size.

DIE-STORAGE MAN; die keeper (clerical). A TOOL CLERK who receives, stores, and issues dies; directs the moving of drop-hammer dies to and from storage; periodically informs tool department of new dies made and old dies destroyed.

DIE-TRY-OUT MAN 4-76.010. A DIE MAKER II who performs theoriginal set-up try-out, and final adjustment of new dies, and repairs worn dies used in a sheet metal press; paints upper die one color and lower die another; operates machine through its cycle by running driving motor a few revolutions at a time until upper die descends into lower die; examines dies for mixing of two colors of paint as an indication of high spots; files, grinds and chisels high spots, indicated by mixing of two paint colors, using hand and power tools, until dies fit; paints template between them, removes template from dies, notes further high spots (recorded by paint rubbed from template to dies), and further grinds, files, chisels, scrapes, and polishes dies.

DIMPLER 6-95.084**. Forms dimples around rivet holes in sheet-metal airplane parts, using a pneumatic gun: inserts appropriate dies into the gun die holders; positions gun so that the dies are centered on the rivet holes; squeezes trigger, causing dies to close, making a dimple in the metal into which rivet head will be counter sunk.

DIMPLING-MACHINE OPERATOR 6-88.622*. A PUNCH-PRESS OPERATOR I who operates a pneumatic power press to depress the edges of holes previously drilled in sheet metal parts so that the heads of rivets, screws, or other fasteners will fit flush with the surface of the metal.

DIPPER II 7-16.930. Coats articles with a protective or color coating by immersing them in a liquid, such as asphalt, lacquer, paint, or stain; adds ingredients to vat, according to specifications; dips articles one at a time, or several at a time, in wire baskets by hand or using a hand-operated hoist; removes excess coating or brushes out heavily coated portions with a brush. Usually specifically designated according to object being dipped, such as BROOM-HANDLE DIPPER (broom); and SPRING DIPPER (matt. & bedspring) or according to type of coating used.

DIRECTOR, EDUCATIONAL 0-39.81. Plans, organizes, and administers training programs designed to promote efficiency through instruction of new employees in company's policies, systems, and routines.

DISASSEMBLER 5-03.572**. A MAJOR-ASSEMBLY INSTALLER. Disassembles completed and tested airplanes for shipment: removes wings and tail assemblies, assisted by other DISASSEMBLERS and using hand tools; separates sections of major assemblies, such as wings and fuselages by removing splice bolts; disconnects electric and hydraulic installations.

DISK-GRINDER OPERATOR 6-78.512. Grinds metal objects to a flat plane surface by pressing them against the side of a horizontally or vertically mounted abrasive wheel; starts machine; lifts object to be ground to a small oscillating rest on table; holds work on table and presses it against rotary disk, or clamps it and pushes table by hand or engages automatic feed, causing work to be pressed against and drawn across the flat or disk side of the abrasive wheel.

DISPATCH CLERK (II) (aircraft mfg.) A SHIPPING CLERK I who prepares loaded containers and packages of aircraft parts for shipment; stencils identifying information on containers or packages, ref. STENCILER, SHIPMENTS.

DISPATCHER, MAINTENANCE SERVICE; dispatcher; maintenance clerk (aircraft mfg.). A CLERK, GENERAL OFFICE who receives telephone and written orders from plant departments for maintenance service, such as repair work machine adjustments, renewals or installation of other plant property, and relays the requests to the appropriate maintenance division; keeps record of requests, services rendered, and date of each, ref. MAINTENANCE CLERK I; requisitions supplies for maintenance and clerical workers.

DISPATCHER, TRUCK OPERATIONS; dispatch clerk; dispatcher, truck (clerical). Expedites the transfer of materials or equipment to or from a plant by directing trip assignments of the fleet of trucks; receives telephone or written requests for the transportation of material or equipment to various destinations; determines what trucks are available and assigns transfer of load to appropriate vehicle and driver; maintains permanent record of transactions, such as time and date of request, date and time of delivery, and any other pertinent data.

DISTRIBUTING CLERK; issuing clerk (aircraft mfg.). A TOOL CLERK who receives orders for aircraft tool supplies, compiles written lists of items requested, and insures that the orders, filled by SHOP CLERKS, are complete before delivery.

DISTRIBUTOR I 9-65.45. Transports products from worker to worker or from department to department in an industrial establishment, distributing the products to worker who performs the next operation inthe process of manufacture and expediting that process by keeping workers constantly supplied with material on which to work; transports material by hand or in a hand truck.

DO-ALL-SAW OPERATOR 6-78.610. Operates an electrically-powered, band-type sawing and filing machine known by the trade name of Do-All, to cut and file irregular shapes from various metal materials; receives parts premarked or may mark them from templates with a scriber; turns selector dial on machine and reads indicator for the proper saw blade or file and speed to be used for each particular type of material; inserts blade or file and turns variable speed indicator to prescribed speed; pushes part against saw or file, and guides it along marked lines by hand, or may use pedal to operate a hydraulically-controlled feeding device; for internal sawing, cuts or drills a starting hole in part, breaks saw or file blade and welds it together with an automatic butt welder built into the machine; turns valve to regulate a stream of air that keeps part during the process.

DOOR ASSEMBLY MAN (aircraft mfg.) A SUBASSEMBLER II. A SMALL-PARTS ASSEMBLER III who completes assembly of airplane doors using prefabricated parts.

DOOR FITTER (aircraft mfg.) A SUBASSEMBLY INSTALLER II. Completes installation of hydraulically-operated doors that enclose retractable landing gear and bomb release compartments: raises airplane by means of hydraulic jacks to elevation required for operation of landing gears; bolts connecting shafts of hydraulic mechanism to doors and makes necessary corrections to installation by adjusting turnbuckles on shafts to regulate pressure exerted, filing door edges to achieve exact fit and hammering door surfaces to produce desired contour. May be specifically designated according to degree of proficiency attained, as door fitter, class a; door fitter, class b; door fitter, class c.

DOORFRAME ASSEMBLER II 7-03.552**. A SUBASSEMBLER II. A SMALL-PARTS ASSEMBLER III who specializes in assembling airplane door frames from prefabricated parts.

DOPER I 5-16.930. Applies brush coats of clear dope (tautening lacquer) to the fabric covering of airplane structures; places the part (fuselage, wings aileron, elevator, or stabilizer) over a pair of saw horses; applies a coat of clear dope to the fabric, brushing it on with swift, long strokes of a wide brush; draws a length of pinked edge fabric tape, saturated with dope from a roller; snips the tape with scissors and lays it over the stitching that secures the fabric in place; smooths out wrinkles by hand; places celluloid drain grommets on trailing edges of wings; applies a second brush coat of dope over the covering.

DOUBLE-CUT-OFF-SAW OPERATOR 6-33.214. Operates a machine equipped with two adjustable cut-off saws mounted on a common horizontal shaft to cut wooden stock to identical lengths: bolts saw disks on power shafts of machine; spaces saws by handwheel to desired length of stock; starts machine; places parts, one at a time, on conveyor belt or chain that feeds stock into the saws, or on movable table and pushes table past saws.

DRAFTSMAN, AERONAUTICAL 0-48.04. Performs duties of a DRAFTSMAN, but specializes in drawing plan for the construction of aircraft and auxiliary equipment and other phases of air transportation as planned by AERONAUTICAL ENGINEER.

DRAFTSMAN CONSTRUCTION 0-38.08. Performs the duties of DRAFTSMAN, but specializes in drawing plans in the field of construction work, making accurate blueprint drawings to scale from design drawings, verbal instructions, sketches, or field notes.

DRAFTSMAN, DETAIL 0-48.01. A DETAILER II who makes detailed drawings, in accordance with customer's orders, to provide shop departments with accurate information for manufacture of wooden structural and ornamental construction parts: confers with customers; makes free hand sketches of designs and drawings of approved sketches; advises shop foremen on difficult or obscure problems. May perform duties of an ESTIMATOR IV.

DRAFTSMAN, ELECTRICAL 0-48.11. Performs duties of a DRAFTSMAN in preparing working plans or wiring diagrams for the erection, installation, and wiring of electrical machinery, equipment, or lighting fixtures for power plants, manufacturing establishments, or buildings.

DRAFTSMAN, HEATING AND VENTILATING 0-48.12. Performs duties of DRAFTSMAN, but specializes in the drawing of plans for the installation of heating and ventilating equipment.

DRAFTSMAN, MECHANICAL 0-48.18. Performs duties of DRAFTSMAN, but specializes in making rough drafting sketches of proposed mechanical devices, and then drawing necessary details on the sketch; prepares accurate scale drawings of parts or machines from specifications.

DRAFTSMAN, PLUMBING 0-48.22. Performs duties of DRAFTSMAN, but specializes in the drawing of plans for the installation of plumbing equipment.

DRAFTSMAN, STRUCTURAL 0-38.25. Performs duties of DRAFTSMAN by drawing plans for structures employing structural steel, such as bridges trusses, plate girders, roof trusses, trestle bridges and columns, and other integral parts; makes drawings for masonry, or timber members.

DRAW BENCH OPERATOR II 4-88.314**. Forms flat sheet-metal strips into tubular, channel, and angular shapes by operating a draw bench (m); selects, sets up, and alines appropriate dies and gripping jaws, and bolts them in place on bed of press; trims, folds, and pinches ends of metal strips to be formed so that they will be more easily fed through the dies by the gripping jaws, using tools, such as pliers, hammers, and bench vises; places metal strips between guides and closes gripping jaws and dies over front end; when forming tubing, superimposes on internal die (Mandrel) on the metal strips and guides both through the dies that form the metal by forcing it against the mandrel; starts machine to actuate the gripping jaws that grasp and force the metal through the dies, forming it to the desired shape; loosens dies and gripping jaws and removes and inspects the formed piece, using instruments, such as micrometers and calipers; clears dies by directing compressed air over them. May set up and aline straightening dies to correct undesired curvatures found in the drawn metal.

DRAW-BENCH-OPERATOR HELPER (aircraft mfg.) Performs the duties as described under HELPER III.

DRAW-BENCH-STRAIGHTENER OPERATOR (any ind.) Straightens shaped sheet metal airplane parts: sets up part to be straightened in the machine, attaching the ends to metal holders, one of which is movable; manipulates controls to apply compressed air to movable holder, stretching and straightening the part.

DRAW-SHAPER OPERATOR (mach. shop). A SHAPER OPERATOR I who works with a shaper (m) that cuts metal when the tool is drawn toward the machine instead of, in the more usual way, when the tool is pushed away from the machine.

DRILL OPERATOR, AUTOMATIC 6-78.081. A MULTIPLE-SPINDLE-DRILL-PRESS OPERATOR or a SINGLE-SPINDLE-DRILL-PRESS OPERATOR who operates a drill press (m) equipped with a device for reversing the feed and returning the drill to the starting position when drilling operation is completed.

DRILL PRESS OPERATOR VII* 9-03.01 A LABORER, PROCESS. Operates a drill press to cut holes in wooden parts of various articles according to layout markings. Performs repetitive routine operations. Does not set up machine.

DRILL SHARPENER II (mach. shop) drill grinder. A TOOL-GRINDER OPERATOR who sharpens drills with a tool-grinding machine designed or adapted specifically for sharpening drills.

#DRILLER, HAND III (any ind.). A LABORER, PROCESS. Drills holes in wood or steel panels, cowls, and other sections of automobiles, furniture, and other objects, using a portable electric drill; may use a jig to guide the drill.

DRILLING-AND-TAPPING-MACHINE OPERATOR; tapping-and-drilling-machine operator (mach. shop) spec. for SINGLE-SPINDLE-DRILL-PRESS OPERATOR.

DROP-HAMMER OPERATOR IV 4-86.170**. Shapes sheet metal, aluminum, and aluminum and magnesium alloys with a drop hammer (m); cleans die surfaces with a cloth and air hose and sprays oil on the die and metal to lessen friction during shaping process; positions metal on die and shapes it by mechanically raising the hammer and allowing it to fall, varying the speed and height of the hammer's descent and the number of blows according to the kind and thickness of the metal and the nature of the drawing operation; checks dimensions of the shaped metal according to blueprints, using a steel rule and template; smooths wrinkles by pounding them out with hand hammers and mallets; may position rubber pads, or various curved strips of plywood (draw rings) on the metal to facilitate shaping; removes rubber pads or draw rings as the shaping progresses. May be designated according to proficiency acquired, as drop hammer operator, first class; drop hammer operator, second class.

DROP-HAMMER OPERATOR, HEAD (forging) 4-86.170. Performs duties as described under FOREMAN I.

DROP-HAMMER-OPERATOR HELPER 9-03.01 A LABORER, PROCESS. Performs duties as described under HELPER III.

DURAL HEAT TREATER 4-87.020**. A HEAT TREATER III who treats aircraft parts made of duralumin.

DURAL MECHANIC 4-80.050 A SHEET-METAL WORKER, AIRCRAFT who forms and shapes aircraft parts from sheet duralumin.

ERCO-FORMER OPERATOR (aircraft mfg.) A DROP-HAMMER OPERATOR II who removes wrinkles from partially shaped sheet metal airplane parts on a machine known by the trade name, Erco Former.

EDGER MAN I (mach. shop) A DIE MAKER II who operates various types of metal-working machinery, such as a planer, shaper, or milling machine, to reduce the edges and other surfaces of dies to accurate dimensions.

ELECTRIC-BRIDGE-CRANE OPERATOR 5-73.010. Lifts and moves heavy objects with an electrically powered hoist mounted upon a metal bridge, which runs along overhead rails, to run the hoisting trolley (rack) back and forth across the bridge, and to raise and lower the load line and anything attached to it (motions of the crane are usually carried out in response to signals from other workers, on the ground.)

ELECTRIC-CONDUIT INSTALLER 7-03.562**. A SUBASSEMBLY INSTALLER II. Installs electric and radio wiring conduits in airplanes: bolts and rivets conduit supports to airplane structure, using tools, such as screw drivers, electric drills, and portable riveting hammers; runs conduits over and through supports, and screws threaded ends of conduits into junction boxes, securing them in place with lock nuts; bolts lengths of cable (bonding strips) across the insulated joints in the airplane structure to distribute static electricity, thus preventing fires, and eliminating radio interference.

ELECTRIC-GANTRY-CRANE OPERATOR 5-73.040. Lifts and moves heavy objects with an electrically powered hoist designed to run across a bridge carried by two towers that are, in turn, supported on flanged wheels that run on a track laid along the ground; closes switch to turn on electricity; moves electrical controller levers and brake pedals to run the towers along their tracks, to run the hoisting trolley (rack) across the bridge, and to raise or lower the load line and anything attached to it. Motions of the crane are usually directed by signals from a worker on the ground.

ELECTRIC-MONORAIL-CRANE OPERATOR 5-73.020. Lifts and moves heavy objects with an electrically powered hoist mounted in a frame which is suspended from a wheeled truck that runs along a single overhead track: moves electrical controller levers and brake to run the crane along its overhead rail and to raise and lower the load. (Motions of the crane are usually directed by a CRANE FOLLOWER or other worker on the ground who signals to the operator.)

ELECTRIC-MOTOR REPAIRMAN 5-83.433. Repairs electric motors, generators, and accessory equipment, such as starting devices and switches, performing various duties, such as removing defective motors and equipment from customer's home or place of business, winding armatures and field coils. Testing armatures, refacing commutators, and installing repaired motors in customer's establishment. May repair transformers.

ELECTRIC-TRUCK OPERATOR 7-88.410. Drives a small truck powered by electric batteries, used for hauling heavy materials in and about an industrial plant or other establishment: controls starting or stopping and forward or backward motion of truck by manipulating levers; steers truck by means of a steering bar or wheel; if truck is equipped with a lift platform controls lifting mechanism by manipulating a lever. May load and unload the truck or hand trucks towed by it.

ELECTRICAL ENGINEER 0-17.01. A classification title for persons meeting the educational experience, or legal qualifications of the general field of electrical engineering that have been established by engineering schools, or licensing authorities. Persons within this group usually specialize in one or more of the following branches of electrical engineering: the design of electrical power generation, distribution, lighting, communication, and transportation equipment, such as dynamos, transformers, switches, lamps, cables, switchboards, and electric railways; the design of electrical motors, industrial equipment, and household appliances; the planning of individual and central electrical lighting, communication, and power distribution systems; the supervision of the manufacture, erection, and operation of the equipment listed above; and the conducting of research in above fields and in the determination of rates for sale of electrical energy as well as laboratory research in electrical phenomena. The following occupations are typical of those classified under this title: APPRAISAL ENGINEER; DESIGNEER; LIGHTING EXPERT; LINE-CONSTRUCTION ENGINEER; POWER-PLANT ENGINEER II, RADIO ENGINEER I; RADIO ENGINEER II; RADIO TECHNICIAN II; SOUND ENGINEER.

ELECTRICAL-EQUIPMENT TESTER (aircraft mfg.) Tests and adjusts electrical airplane equipment and accessories prior to installation, using special testing equipment and hand tools: removes accessories or equipment, such as battery solenoids, bells, bomb releases, booster coils, condensers, and ignition switches from wrappings and examines them for rust, grease, dirt, and other defects; connects accessories and equipment to special testing devices to determine voltage under different loads, output and input of power at various operating temperatures, amount of current used at different or specified voltages, electrical leaks, short circuits, and open circuits; corrects adjustment of levers, screws, bolts, nuts, and springs, using hand tools; rubber stamps or attaches tag to approved equipment and repacks in original container; keeps records of tests made. May design, lay out, and construct special testing jigs.

ELECTRICAL INSPECTOR II 4-97.930. Inspects and tests installed aircraft electrical equipment: verifies wiring in fuselage and wings with blueprints; examines conditions of wires, measuring curvature of conduit bends with scales and protractors, inspects installations, such as lights, flap and landing gear motors, and conduit boxes, tests bonding and wiring in airplanes with instruments.

ELECTRICAL REPAIRMAN 4-97.420. Keeps electrical equipment, such as wiring, motors, switches, switchboards, and electrical mechanisms in good repair and operating condition: performs various duties, such as replacing defective wiring and making connections to new electrical installations. Replacing burnt out fuses, replacing small parts on motors, cleaning and oiling motors, and repairing electrical fixtures. May make new installations of fixtures motors, and other electrical equipment. May rewind and make major repairs to motors; may repair elevators.

ELECTRICAL-TEST INSPECTOR (aircraft mfg.) A FINAL-ASSEMBLY INSPECTOR who examines and tests the operation of bomb releasing mechanisms, and the retraction and lowering of landing and tail wheels to determine that all parts function properly.

ELECTRICIAN 4-97.010. Lays out, assembles, installs, and tests electrical fixtures, apparatus, control equipment, and wiring used in the alarm, radio communication, light and power systems of buildings or other construction projects: plans proposed installation from blueprints, sketches, or specifications; secures panel boards, switch boxes, pull boxes and other concealed or recessed equipment to the frame of the structure prior to erection of walls, the plastering of rooms, or pouring of concrete; measures, cuts, threads, bends, assembles and installs conduit which connects the various outlets, panels, and boxes, using tools such as hacksaw, pipe benders and threading tool; draws wires through conduit. Splices wires by removing (skinning) insulation from conductors, scraping together, soldering the connection, and applying several layers of friction tape; installs and connects equipment to wiring system; tests circuits for continuity and proper connections, using a battery and buzzer of light bulb.

ELECTRICIAN, AIRCRAFT RADIO 5-83.447**. A RADIO MECHANIC II who installs, tests, adjusts and repairs radio sending and receiving equipment; mounts radio sets in airplanes, bolting and fastening them in place; connects sets to power sources and antennae; tests, adjusts and repairs sets.

ELECTRICIAN, AIRPLANE 4-97.910. Installs electrical wiring, fixtures, and switches in aircraft: cuts insulated wire to length according to blueprint and installs it in conduits attached to the aircraft structure; scrapes ends of wire and solders them to their respective terminals; installs wing tip and tail lights, interior light fittings, and dashlights; hooks up and tests all electrical equipment, and tests aircraft instruments operated by electricity with electrical gages.

ELECTRICIAN, CHIEF I 4-97.420. Supervises the work of ELECTRICAL REPAIRMAN, performing duties as described under FOREMAN I.

ELECTRICIAN, FIELD SERVICE 4-97.910**. An ELECTRICIAN, AIRPLANE who tests, adjusts, and repairs, airplane instruments, wiring, and electrical accessories as a final check preparatory to the test flights of airplanes. May test and repair airplane radio sets.

ELECTRICIAN HELPER I 9-65.43. A LABORER, Performs duties as described under HELPER III.

ELECTRICIAN HELPER, AIRPLANE 9-03.01**. A LABORER, PROCESS. Performs duties as described under HELPER III.

ELECTRICIAN, RADIO I 5-83.445**. Inspects, adjusts and repairs high-powered stationary and mobile radio transmitting equipment; adjusts controls and tests frequencies of transmitters using a frequency meter; listens to radio range station at frequent intervals to discover any irregularities in its performance; periodically operates emergency truck transmitter to insure its readiness for immediate use; examines faulty equipment and makes minor repairs, such as replacing condensers, switches, and tubes; takes defective equipment to repair shop when dismantling is required to make necessary repairs as indicated by examination with testing instruments; makes similar repairs to local inter-communications telephone system.

ELECTRICIAN, WING 4-97.910**. An ELECTRICIAN, AIRPLANE who specializes in installing the wires in airplane wings for gun controls, navigation and landing lights, and other electrical equipment.

ELEVATOR ASSEMBLER 7-03.552. A SUBASSEMBLER II. A SMALL-PARTS ASSEMBLER III who specializes in assembling airplane tail parts known as elevators. Sometimes specifically designated according to individual parts assembled, as elevator-end-rib assembler.

ELEVATOR OPERATOR, FREIGHT 2-95.30. Transports materials, equipment, and employees between floors of an industrial or commercial establishment by manipulating control levers or other starting and stopping devices to regulate movements of an elevator cab; opens and closes safety gate and door of elevator at each floor where a stop is made; assists employees to load or unload freight.

ELEVATOR OPERATOR, PASSENGER 2-95.20. Transports passengers between floors of an office building, apartment house, department store, hotel, or similar establishment by manipulating control levers or other starting and stopping devices to regulate the movement of an elevator cab; opens and closes safety gate and door of elevator at each floor where stop is made; supplies information to passengers, such as the location of offices, merchandise and individuals. May perform other duties such as distributing mail on various floors, answering telephone and preventing entrance into the building of unauthorized persons.

EMPLOYMENT INTERVIEWER 0-68.71. Interviews job applicant from viewpoint of an employer to ascertain what work is best suited for his particular abilities: makes study of employment possibilities; contacts employers to sell them services of the agency; selects applicants he feels best suited to the position and refers them to the employer for his consideration and selection; advises applicants as to what type of work they are best fitted for.

ENCLOSURE INSTALLER; structural assemblyman (aircraft mfg.) A SUBASSEMBLY INSTALLER I Installs enclosure (covering consisting of stationary and movable sheet metal and glass sections) on airplane fuselage; fits sections and hinges, measuring locations to blueprint specifications and securing parts with metal clamps; drills holes for bolts, nut plates, or riveting, using an electric hand drill; places jig over sections that support cockpit door in order to obtain accurate alinement; inserts bolts to permanently unite parts or fastens with spring holders for riveting. Workers may be specifically designated according to degree of skill acquired as enclosure installer, class a; enclosure installer, class b; enclosure installer, class c.

ENDS ASSEMBLER 7-03.542**. A DETAIL ASSEMBLER I. Fits and rivets tank ends to airplane fuel tanks; marks rivet holes to be drilled in end flanges of tanks; fits and clamps tank ends inside and flanges of tanks; clinches ends in place by hammering tank shell flanges over ends, using mallets and dolly blocks; drills rivet holes in tank flanges to correspond with holes in tank ends, guided by markings and using a portable electric drill; rivets ends in place, aided by another worker who bucks-up the rivets.

ENGINE-AND-HYDRAULIC INSPECTOR (aircraft mfg.) Inspects rigging of airplane engine controls and the installation of engines, plumbing, and propellers to determine that workmanship and materials conform to specifications: Inspects pulleys for free movement, chips, and cracks; pulls cables by hand to ascertain correct tension; checks condition of cables and cable fittings, and clearance of cables from plumbing, firewalls, and other installations;

examines plumbing fittings for short sleeves, burring, and tightness of fit; checks tubing lines for scratches, kinks, color coding and clearance from all parts, moving rods and cables and measuring clearance with machinists' scales; examines engine installations for clearance, correct length of bolts, cracks in welds, and excessive burrings on screw heads; determines that nut safeties on engine installations have been installed, cotter keys bent properly, safety wire installed to prevent rotation of bolts, and that no parts are damaged and covered up during engine hanging and propeller installations; approves or rejects installations, making proper notations on special record forms (inspection sheets); notifies workers of defective parts and installations.

ENGINE-CONTROL INSTALLER, cableman; power-plant control installer (aircraft mfg.). A SUBASSEMBLY INSTALLER I. Installs in airplanes fuselages and wings, the cockpit lever assemblies regulating the throttle, supercharger, carburetor-air and fuel supplies, and related mechanisms, including control motors, safety devices, and color and number-identified cables, rods, and pulleys, guided by blueprint instructions, and jigs; bolts lever assemblies in cockpit and affixes metal terminals and location markers to end of each attached cable; locates and secures designated brackets and pulleys; threads cables through fuselage and wings; bolts and adjusts length of activating rods; drills and reams necessary holes for installation of control motors and safety devices; hooks up cables and rods to assembly control motors but does not connect terminals to engine parts. May be specifically designated according to degree of proficiency acquired as engine-control installer, class a; engine-control installer, class b; engine-control installer, class c.

ENGINE-CONTROL INSTALLER, FUSELAGE INSTALLATIONS (aircraft mfg.). A SUBASSEMBLY INSTALLER I. An ENGINE-CONTROL INSTALLER who installs engine and fuel control lever assemblies and cables in fuselages; checks cables for clearance by temporarily clamping ends to wing and fuselage junction, tightening them by screwing turnbuckles, filing metal obstructions, and adjusting brackets, attaches to each cable end two metal strips used as couplings to wing cable installations.

ENGINE-CONTROL INSTALLER, WING INSTALLATIONS (aircraft mfg.). A SUBASSEMBLY INSTALLER I. An ENGINE-CONTROL INSTALLER who bolts and threads various color-and number-identified engine control cables, rods, safety devices, and control motors in inboard airplane wings and nacelles, guided by blueprint instructions or jigs, drilling necessary bolt holes with an electric hand tool, and synchronizing action of related parts.

ENGINE-COWLING-AND-NACELLE-DOOR INSTALLER (aircraft mfg.) A SUBASSEMBLY INSTALLER II. Installs formed engine cowling and battery, access, and engine-firewall doors in airplane nacelle: fits cowling in place, trimming off excess metal with files, and attaches ground wires (bonding braid) at specified intervals; bolts cowling in position; fits and trims battery and access doors, using snips, files, and filer hammer; positions doors and secures them with screw fasteners; bolts engine-firewall door inside nacelle and connects velocity measuring device (tachometer) by tightening end fittings with screwdriver and wrench; tests operation of preinstalled cowling flaps that serve as temperature regulators and makes necessary adjustments by turning threaded end connections of activating rods.

ENGINE-INSTALLATION ASSEMBLER 5-03.572**. A MAJOR-ASSEMBLY INSTALLER. Puts together and installs partially assembled aircraft engines according to blueprint specifications; lifts engines with a chain hoist into an engine mount bolted in a portable engine-mount stand; attaches engine parts, such as the carburetors, generators, fuel and oil pumps, spark plugs, magnetos, and electrical equipment, bolting and clamping them as required; hoists engine and attached mount to its proper position in the fuselage or wing, and bolts the mount to the firewall of the airplane; connects fuel and oil lines, pressure gages, engine control rods, and instrument lines on the engine to their corresponding fittings on the firewall by clamping, screwing, and attaching gaskets and insulation as required; strings wires to engine electrical equipment according to wiring diagrams. Usually adjusts engine controls after engine is installed. May uncrate engine and parts and clean them with solvent-saturated rags and an air hose prior to fastening them in the mount.

ENGINE-INSTALLATION-ASSEMBLER HELPER 9-03.01**. A LABORER PROCESS. Performs duties as described under HELPER III.

ENGINE-LATHE OPERATOR I 4-78.011. Shapes external and internal cylindrical surfaces of metal objects with a lathe on which the rotations of the work and the feeding of the tool may be accomplished mechanically: clamps or bolts work on spindle, using faceplate or chuck, or fastens work between centers; sharpens tools on a grinding lathe, and clamps them in place; shifts belts or moves levers to select appropriate speeds of rotation and tool feed; engages an accurately made lead screw and adjusts its rate of rotation to a definite ration with that of spindle when preparing to cut threads, turns on motor and starts machine: turns handwheels to bring tools into contact with work; engages automatic feed or continues to turn handwheels to feed tools into or along work. May be classified according to size of machine, as small, medium, and large.

ENGINE-LATHE OPERATOR II 6-78.011*. Shapes external and internal cylindrical metal surfaces with an engine lathe, performing simple repetitive operations, as contrasted to the ENGINE-LATHE OPERATOR I who performs a variety of complicated cutting operations, using the same type of machine: fastens workpiece between chuck and headpiece; starts machine and coolant flow; feeds cutting tool into workpiece by turning hand wheel or by shifting feed-control levers; removes work when completed; gages cut with micrometers, calipers, and verniers; may also be required to make simple set-ups, although this is usually done by a JOB SETTER II.

ENGINE MAN 5-80.352**. Ground tests the engines of completed airplanes; visually inspects the engine before testing; fills fuel and lubricating tanks; starts engine, releases brakes, and taxis airplane about flying field, runs motor at different speeds, listening to motor sounds and observing motor instruments; tests fuel-system controls by cutting out all but one tank at a time; makes adjustments to motor parts, such as carburetors, oil pumps, and magnetos.

ENGINE-MOUNT-AND-COWLING ASSEMBLER 5-03.554*. A FITTING MAN who fits together and installs sheet-metal cowlings used to cover and streamline parts of an airplane, such as the engine, landing gear, and parts of the fuselage; drills holes for screws, rivets, and bolts, using an electric hand drill; removes dents and shapes areas of the metal using a rawhide hammer and smoothly curved steel blocks, bolts, screws, and otherwise attaches cowlings to the airplane.

ENGINE PREPARER 5-03.572**. A MAJOR-ASSEMBLY INSTALLER. An ENGINE-INSTALLATION ASSEMBLER who prepares airplane engines for installation by attaching the engine parts, such as carburetors, fuel and oil pumps, and generators.

ENGINE TESTER 5-80.350*. Checks performance of new or overhauled airplane engines by operating them under controlled conditions, measuring factors, such as fuel consumption and manifold pressure, and interpreting the data thus obtained: mounts engine on test stand using chain hoist; connects oil and fuel lines, instruments, controls, and accessories; connects pre-pellor or dynamometer to crankshaft; starts engine and operates it for a specified period of time at each of several different speeds; reads and records speed, temperature, fuel level, oil pressure, manifold pressure, and other data; calculates performance of engine at different speeds, using slide rule, standard formulas and curves, and the test data; makes minor repairs or adjustments required to make engine meet specifications.

ENGINEERING CHECKER; checker; drawing checker (aircraft mfg.) Visually examines airplane engineering drawings to correct errors in computing and recording dimensions and specifications: compares figures on lay-out of parts and assemblies with those of drawings, examining angles, tolerances, bend allowances, and dimensions, for accuracy; determines suitability of the design, materials, and tooling and fabrication steps, guided by his knowledge of drafting and shop methods. May specialize in checking drawings for only certain assemblies, such as fuselage wings, and flight-control surfaces.

ENGINEERING CLERK 1-35.01**. Performs any one or a combination of the following duties in the preparation of airplane parts lists, operation and maintenance manuals, and the production specifications manuals: compiles general lists of airplane parts from blueprints; prepares detailed lists of structural elements to be produced for airplane major assemblies, subassemblies, and for small parts; compiles operation and maintenance manual describing maintenance procedures, such as the lubrication of parts and the charging of batteries; compiles list of specifications for all components of airplanes, transcribing blueprint data into compact paragraphs.

ENGINEERING-LIAISON MAN (aircraft mfg.). Coordinates activities of engineering and shop departments in solving airplane production problems; interprets engineering data to the departments, correcting faulty procedures, that may occur in tooling, fabrication, heat-treating, assembling, and inspection; determines practicability of new production methods suggested by foremen, routing recommendations to the engineers; orders inspection of tooling equipment and processes when rejections occur consistently; orders rework of parts when feasible. May be assigned to liaison duties on major assemblies or detail parts.

ENGRAVING-MACHINE OPERATOR 4-83.510**. An ENGRAVER I who operates a pantograph to mark letter, numerals and directional signs on airplane parts, such as panels and name plates.

EQUIPMENT INSPECTOR; construction inspector; fabrication inspector (aircraft mfg.) A FINAL-ASSEMBLY INSPECTOR who specializes in inspecting wing and fuselage equipment installations for completeness, workmanship, proper clearances, and defective materials and assemblies.

EQUIPMENT-INVENTORY CLERK; record clerk; shop clerk (aircraft mfg.). An INVENTORY CLERK who keeps a perpetual inventory of supplies, equipment, and machinery received and issued; determines from records need for new or additional items.

ERCO-MACHINE OPERATOR 6-95.074**. AN ENGRAVER I who operates a pantograph to mark letters, numerals and directional signs on airplane parts, such as panels and name plates.

ESTIMATOR IV 0-69.64. Computes labor, material, and equipment, installation costs to prepare bids for contractors or sub-contractors for construction work or as an estimate for customers: compiles lists of materials needed in itemized and priced form from blueprints; computes and itemizes labor costs; may compute profit percentage of estimate before submitting bid. Usually specialized in making estimates in specific lines of work, such as woodwork, electrical work, or mechanical work.

ETCHER II 9-03.01**. A LABORER, PROCESS. A PICKLING OPERATOR who prepares metal aircraft parts for welding by dipping the parts in an acid bath to remove foreign matter; may smear a special acid paste over areas to be welded when parts are too large to be dipped in an acid bath, wiping off paste with a rag after a specified period of time.

EXHAUST-STACK INSTALLER (aircraft mfg.) A SUBASSEMBLY INSTALLER I. Assembles and installs exhaust stacks that connect engines and super-chargers, and bolts superchargers and engines into airplane wings: installs exhaust stacks by fitting together component sections in preinstalled shrouds (sheet-metal enclosures) accurately locating position of clamps that are installed to provide clearance between shrouds and stacks; lays out and drills bolt holes with an electric hand drill; assembles parts and secures them with bolts; positions and bolts superchargers, guided by a jig; guides engines into preinstalled mountings using an overhead crane, and bolts them in position. May be specifically designated according to degree of proficiency required, as Exhaust-Stack Installer, Class a; Exhaust-Stack Installer, Class b: Exhaust-Stack Installer, Class c.

EXPERIMENTAL-BODY-AND-MINOR ASSEMBLER (aircraft mfg.) Performs the entire sequence of assembly operations on newly designed airplanes, following blueprint specifications, and using drafting, engineering, and measuring instruments, jigs, and metal-working machines and tools, such as drill presses, forming presses, power and hand shears, files, and mallets: lays out work by inscribing reference marks on parts; puts together subassemblies such as gas tanks, spars, elevators, and the fuselage and wing framework, drilling bolt and rivet holes with an electric hand drill and temporarily securing parts with clamps or special fasteners for riveting or welding; assembles major units, such as wings and fuselage, fits sheet metal over surfaces, ref. SKIN MAN, connects major assemblies and installs minor assemblies to form completed airplane, May be specifically designated according to degree of proficiency acquired, as experimental body and minor assembler,
Class a; experimental body and minor assembler,
Class b; experimental body and minor assembler,
Class c; experimental body and minor assembler.

EXTERNAL-CYLINDRICAL-GRINDER OPERATOR; external-grinder operator (mach. shop.) spec. for CYLINDRICAL-GRINDER OPERATOR.

EXTERNAL-GRINDER OPERATOR I (auto. mfg.) grinder hand. 6-78.513. Operates an automatic or semiautomatic machine that rough-grinds or finish-grinds the bearing surfaces on such parts as camshafts and crankshafts: lifts part by hand or hoist into arbor or other fixture which holds part in alinement with cutting tools; moves lever to clamp part rigidly in place in fixture; starts grinding wheels; may regulate pressure exerted on part by grinding wheel, by moving lever or hand guide; stops machine when grinding is complete and unclamps piece; lifts piece by hand or hoist onto pile or conveyor. Checks accuracy of work by using precision gages measuring to 0.0003 inch. Resurfaces grinding wheel by holding special tool against surface to cut worn surface to a smooth finish.

EXTERNAL GRINDER, TOOL; outside-diameter grinder, tool (mach. shop). A CYLINDRICAL-GRINDER OPERATOR who grinds the external edges of cutting tools for various metal working machines.

EXTRUSION FORMER 4-80.050**. A SHEET-METAL WORKER, AIRCRAFT I who straightens and shapes partially fabricated sheet metal structural parts; tries parts in check jigs and completes forming with mallets and hammers, using an arbor press for straightening and a shrinking machine.

FABRIC WORKER I 5-03.030. Lays out, cuts, and sews airplane fabric to form covering for wings, fuselage, and tail surfaces of aircraft: lays fabric on surface of workbench; draws outline of cover, using a template as a guide, with chalk; cuts material on chalk line with scissors or cutting machine; sews fabric with a lap seam on a sewing machine to form an envelope that will fit the structure to be covered.

FABRIC-WORKER FOREMAN (aircraft mfg.) 5-03.030. Performs duties as described under FOREMEN I, supervising FABRIC WORKERS I in the installation and repair of airplane fabric covering.

FACTORY LAY OUT-MAN 0-19.01. An INDUSTRIAL ENGINEER or a MECHANICAL ENGINEER. Lays out scale drawings of complete factory departments to provide maximum possible operating efficiency; measures and studies available floor space; draws plan of floor space to scale, using drafting tools; studies the sequence of operations to be performed and the flow of materials; studies and measures machines, conveyors, benches, furnaces, and other equipment; coordinates all available knowledge and information into a finished scale drawing, showing the most efficient location for each piece of equipment and the necessary working area around each.

FAIRING INSTALLER (aircraft mfg.) A SUBASSEMBLY INSTALLER II. A SHEET-METAL ASSEMBLER I who installs sheet metal strips shaped to reduce wind resistance (fairings) on airplanes. May fit a thin metal strip to inner side of fairing preparatory to welding by WELDER, SPOT in order to obtain a smooth surface; may cut rubber stripping and glue it to fairing edges, using a brush.

FAIRING-INSTALLER HELPER (aircraft mfg.) A LABORER, PROCESS. Assists FAIRING INSTALLER fit fairing on airplanes by performing simpler tasks, such as trimming edges with hand shears, filing edges, and alining bolt and rivet holes.

FAIRING MAN II 4-80.050**. A SHEET-METAL, AIRCRAFT I who specializes in shaping the sheet-metal streamlining, which covers the junctions between the main element of an airplane, such as that between the wing and fuselage. Usually specifically designated according to the type of fairing fabricated, as fairing man, tail fillet; fairing man, elevator and rudder.

FARNHAM-ROLLER OPERATOR 6-94.215**. A FORMING-MACHINE OPERATOR IV Who sets up and operates a forming machine known by the trade name Farnham Roller to form bends or curves in sheet metal, adjusting the machine rollers to obtain bends according to blueprint or template specifications.

FERRY PILOT (aircraft mfg.) Flies airplanes from factory to designated delivery points: obtains instructions on time and place of delivery; determines route of flight using maps and charts, weather reports and information on landing fields along the way; calculates time required and decides time of take-off; inspects airplane before flight, examining such items as fuel and oil supply, food and condition of motors; flies to the delivery point; turns delivered airplane over to owner or agent and secures necessary documents; informs factory of delivery by telephone or telegraph.

FIBRE WORKER (aircraft mfg.) Fabricates various fibre articles for electrical panel and other assemblies using such equipment (similar to woodworking equipment) as table saw, jointer, drill press, hand drills, bandsaws, and sanders. Check accuracy of work with scales to close tolerances (1/64 inches).

FILER (VII) (aircraft mfg.) burr man. A LABORER, PROCESS. Smooths ends of preformed metal airplane tubing by hand: places tubing in a file block and clamps block in vise; removes rough edges and burrs from ends of tubes, using hand files; rubs inside and outside edges with emery cloth or sandpaper to a smooth finish; ties finished tubing into bundles and sets aside to be washed.

FILLER-AND-WATER SANDER 6-33.131**. Spreads filler over wooden airplane structural units, such as wings, fins and stabilizers, and sandpapers the surface smooth; fills holes with putty; pours filler on surface of parts; pours water over surfaces and sandpapers them smooth; similarly sandpapers the surfaces of parts which have been sprayed with paint.

FIN ASSEMBLER 6-33.925**. An AIRPLANE WOODWORKER II who assembles airplane fins of prefabricated wooden parts.

FINAL ASSEMBLER I 5-03.572**. A MAJOR-ASSEMBLY INSTALLER. Joins together major assembly units to form complete airplanes: hoists into place and alines in a fixture airplane assemblies, such as wings, tails and fuselage sections, using a jack or chain hoist; fits and bolts sections together, cutting or filing away excess metal to secure a flush fit and drilling bolt holes as necessary; installs hydraulic and mechanical systems that operate the engine and flying controls, instruments, bomb-bay doors, retractable landing-gears and other working parts; tightens cables by turning turnbuckles so that the controls are sensitive, testing the strain on the cables with tension meters and verifying the angles of movement with protractors; bolts landing gears in place and connects them to the hydraulic controls; installs fuel systems. Usually disassembles airplanes into major assemblies, such as wings, tails and fuselages for shipping. Frequently specifically designated according to degree of proficiency attained, as final assembler, first class; final assembler, second class.

FINAL ASSEMBLER IV 7-03.562**. A SUBASSEMBLY INSTALLER II. Installs in and on airplane fuselages such parts as windshields, cowling, doors, seats, tables, and other interior fixtures; fits sheet metal, plastic and fabric in place, trimming away the excess with files, snips, scissors, and knives, drills holes in parts and attaches them in place with bolts, rivets, and retaining strips; finishes parts as necessary with hand tools.

FINAL-ASSEMBLER HELPER 9-03.01**. A LABORER, PROCESS. Performs duties as described under HELPER III.

FINAL ASSEMBLY APPRENTICE (aircraft mfg.)--Performs duties as described under APPRENTICE I.

FINAL-ASSEMBLY INSPECTOR 5-03.812**. Inspects completed airplanes for defects of assembly and operation: operates controls to ascertain that they are sensitive, properly installed, and are not excessively slack; shakes and pounds with his hands major assemblies, such as wings and tails, to detect loose splicing; inspects alinement of airplane members, using plumb bobs, sight levels, scales, and other devices; examines miscellaneous installations, such as tires, oil and gasoline lines, **instruments** armament, wiring, and lights; orders disassembly of unsatisfactory parts and determines the cause of the defect. This worker does not inspect motors, radio, or electric installations. Sometimes specifically designated according to the part inspected, as final-assembly inspector, engine installation; final-assembly inspector, fuselage installation.

FINAL-ASSEMBLY INSPECTOR, ENGINE INSTALLATION; engine-installation inspector (aircraft mfg.) Inspects completely assembled airplane engines, mounted in jigs; visually examines accessories and parts such as carburetors, fuel pumps, spark plugs, magnetos, booster coils, electrical junction boxes, and engine mounts to detect defects in installation, materials used, and to insure completeness of assembly according to specifications; determines that all bolts and nuts are properly secured and are not damaged because of ill-fitting wrenches; removes defective parts from engine and returns to appropriate department for reworking, repairing, or scrapping; attaches approval tags to engines passing inspection; inspects engine accessory installations, such as wiring and fuel lines, ref. FINAL-ASSEMBLY INSPECTOR. May use precision measuring instruments, such as calipers and scales for determining dimensions of bolts, control rods, and cables. May check size and shape of parts against templates.

FINAL-TANK INSPECTOR (aircraft mfg.) Inspects various types of aluminum tanks before installation in airplanes: examines tank exteriors for proper convexity of head, porous welding, cracks in metal, and surface scratches; observes pressure testing, ref. TANK TESTER II, to determine that tests are performed according to specifications; checks threads of tank fittings, using plug thread gages; compares measurements of tanks,taken with micrometers and machinists' scales, with blueprints to insure specifications are complied with; usually inspects tank interiors for dirt, flakes of flux, or other foreign particles, using mirrors and an extension light; returns defective tanks to appropriate department for reworking or correction; keeps records of inspections made and stamps approved tanks with designated symbols, ref. STAMPER I (any ind.)

FINAL PICK-UP MAN, ELECTRICAL: electrical final assembler (aircraft mfg.) Examines the installation of electrical equipment on an airplane, completing the wiring as necessary, and installing various accessories and parts, such as compasses, electric lamps, fuses, and batteries: checks equipment to determine that installations are complete, securely attached, and properly wired; installs compass by screwing its frame to preinstalled bracket; fits fuses in fuse box terminals and secures them by tightening nuts; installs batteries by champing them to holders and connecting cables and gas-release tubes to appropriate parts; connects motor wires to firewall by inserting plugs into proper receptacles and secures them by attaching metal collars over receptacles; connects wiring to lux bottle (fire extinguisher device) and installs a dynamite cap (used to break electrical connections). May be specifically designated according to degree of proficiency acquired, as final pick-up man, electrical, class a; final pick-up man, electrical, class b; final pick-up man, electrical class c.

FINISHER, HAND (XII) (aircraft mfg.) metal finisher. A LABORER, PROCESS. Straightens metal aircraft parts warped during heat treating: fits and pounds warped parts over wood or metal patterns to remove irregularities, using mallet; smooths rough edges by filing, rubbing with steel wool, and by holding them against an electric-powered sandpaper-covered wheel.

FINISHING-LATHE OPERATOR 4-78.011. An ENGINE-LATHE OPERATOR who takes a fine finishing cut on the piece being turned in the lathe.

FIRE-WALL ASSEMBLER 4-80.060**. A SHEET-METAL WORKER, AIRCRAFT II who specializes in fabricating airplane fire-walls of stainless steel and duralumin which are later installed between the airplane motors and the fuselage.

FIREMAN, STATIONARY BOILER 7-70.040. Fires stationary boilers, used in a factory, power plant, or other establishment to generate power or to supply steam for industrial processes. Specifically designated according to type of equipment, as FIREMAN, TAIL ROPE (bit. coal mining) or according to place of employment, as FIREMAN, POWER-HOUSE: FIREMAN, WASHERY (anth. coal mining).

FIRST-PART INSPECTOR, MACHINE SHOP (aircraft mfg.) An INSPECTOR (mach. shop) who examines first parts formed by machines in machine shop to determine conformity to specifications, using precision measuring devices such as, vernier depth gages, micrometers, calipers, and V blocks; inspects lay out work for accuracy and feasibility of layout on material; determines whether work can be performed on available machines, using his experience and knowledge of equipment and machine shop practices; establishes sequence of operations for performing work.

FITTER XV 7-03.562**. A SUBASSEMBLY INSTALLER II. Fits and attaches small steel parts, such as brackets, clips, and tubing to airplane fuselage frame or in an appropriate jig; scribes portions that require trimming; files, grinds, or cuts away excess metal, using hand and power tools; clamps fitted parts on fuselage or in jig preparatory to tack welding.

FITTING MAN 5-03.554**. A SUBASSEMBLER III. Works singly or as a member of a group who temporarily bolt, rivet, or tack-weld together parts of aircraft, such as motor mounts and cockpit cowlings prior to permanently uniting them; ascertains from blueprints the most advantageous system of assembly; examines all supplementary parts for defects, using squares, micrometers, and rules to test the measurements; places parts in a jig or fixture to insure the proper relative fit of the piece at all points; makes adjustments, using mallets and files to improve the juxtaposition of parts; when all pieces fit satisfactorily, either bolts them together or temporarily welds them; reshapes and straightens fittings warped by the heat of the welding process by measuring the amount of deformation, using micrometers, calipers, squares, and rules, and hammering and bending parts to the desired shape. May fit and assemble parts without the aid of jigs or fixtures when building equipment for new aircraft types. Usually specifically designated according to the degree of proficiency acquired, as fitting man, first class; fitting man, second class.

FITTING-MAN HELPER 9-03.01*. A LABORER, PROCESS. Performs duties as described under HELPER III.

FITTING-SHIELD-AND-BRACKET INSTALLER; bracket installer (aircraft mfg.) A SUBASSEMBLY INSTALLER II. A FITTER XV who installs various fittings, brackets and unwired electrical junction boxes in airplane wings, guided in location of drill holes by blueprints or jigs. May be specifically designated according to degree of proficiency acquired, as
Fitting shield, and bracket installer, class a;
Fitting shield, and bracket installer, class b;
Fitting shield, and bracket installer, class c.

FIXED-BED-MILLING-MACHINE OPERATOR 4-78.031. A MILLING-MACHINE OPERATOR II who works with a milling machine which, for the sake of strength and rigidity, has been so designed that the table on which the work is held is adjustable only in a horizontal plane (has no vertical adjustment.)

FIXED-FLIGHT SURFACE INSTALLER (aircraft mfg.) A MAJOR ASSEMBLY INSTALLER. Installs on airplane fuselage the inboard wing, outboard wing, stabilizers, and vertical fin (fixed flight surfaces): lifts parts by means of an overhead traveling crane, positions and temporarily secures them by inserting crane, positions and temporarily secures them by inserting pins through terminals; reams terminal holes for connection of assemblies, using a variety of pneumatic and electric drills and reamers, shaping holes by degrees by inserting a pin into each hole as cutting progresses to determine tool required and observe depth of cut, guided by surface markings on pin; performs reaming operations with a long extension tool working in a team of two, one of whom exerts pressure at boring point with a stick and applies cooling oil while the other presses against end with his shoulder and controls cutting speed; connects terminals by hammering pins through holes, tightening nuts with a hand wrench and securing with cotter pins; similarly joins end plates of outboard and inboard wing sections. May be specifically designated according to degree of proficiency acquired, as fixed-flight surface installer, class a; fixed-flight surface installer, class b; fixed-flight surface installer, class c.

FIXTURE MAKER 4-76.210. A TOOL MAKER who specializes in the construction, and repair of fixtures.

FLANGER IV 6-94.228**. Flanges the edges and ends of airplane gasoline and oil tanks preparatory to assembling, using a hand-operated machine equipped with flanging rolls; positions edge of part between the rolls of machine; turns hand crank of machine to draw part through rolls, guiding the part by hand to form the flanges.

FLANGER HELPER 9-03.01**. A LABORER, PROCESS. Performs duties as described under HELPER III.

FLANGING-MACHINE OPERATOR IV 6-94.224*. Sets up and operates a sheetmetal former (m) to flange sheet-metal aircraft parts; changes and adjusts die set according to type of flange to be formed: oils part to be flanged and inserts part in machine; starts machine to actuate hammer that forms flange, guiding part through machine; checks shaped part for conformity with template; straightens warps and bends caused by forming operation with a wooden mallet.

FLAP ASSEMBLER 7-03.552**. A SUBASSEMBLER II. A SMALL-PARTS ASSEMBLER III who specializes in assembling airplane flaps from prefabricated parts.

FLIGHT ANALYST (aircraft mfg.). An AERONAUTICAL ENGINEER. Determines the physical characteristics of airplanes by conducting flight tests and analyzing their results, using special equipment, such as motion-picture cameras, special meters, and pressure gages.

FLIGHT-AND-ENGINE-CONTROL RIGGER (aircraft mfg.) Connects preinstalled engine and flight control cables and rods at various junctions, adjusts their tension, and checks action of flight control surfaces: joins cables by means of turnbuckles and tightens them to specifications by adjusting turnbuckles; checks extent of travel of flight control surfaces, such as rudders, elevators, and ailerons by activating them through manipulation of cockpit controls, measures their travel with a protractor, and makes any necessary corrections to meet specifications by adjusting their controlling rods and cables; wraps turnbuckles with safety wire to prevent loosening. May be specifically designated according to degree of proficiency acquired, as flight and engine control rigger, class a; flight and engine control rigger, class b; flight and engine control rigger, class c.

FLIGHT-CONTROL INSPECTOR (aircraft mfg.) Inspects installation and functioning of airplane flight controls for conformity to specifications: moves pedals and levers controlling elevators, rudders, ailerons, trim tabs, and wing flaps, to various positions to determine that they function properly and move within a radius of prescribed tolerances; tests tension of cables by pulling them by hand or using special testing equipment; examines fairleads and pulleys for defects in workmanship and materials, and ease of operation; checks flight controls for proper clearance, using machinists' scales for measuring; attaches record card of unsatisfactory installations to plane or indicates approval of installations.

FLOOR ASSEMBLER 6-78.632. Fits and fastens metal parts together with bolts, screws, or rivets, to assembler machine products partially or completely. May remove small quantities of metal by hand with files and scrapers to produce accurate fits between parts. May melt bearing metal and pour it into bearings of moving parts.

FLOOR-BOARD ASSEMBLER II 4-80,060**. A SHEET-METAL WORKER, AIRCRAFT II who specializes in fabricating cockpit floor boards of duralumin.

FOLDING-MACHINE OPERATOR VII 6-94.208. Clamps metal sheets to a table having a hinged joint, and bends the metal along the joint by raising the hinged part of the table to the desired angle by hand.

FOOT-MILLING-MACHINE OPERATOR (aircraft mfg.). A MILLING-MACHINE OPERATOR II who cuts feet of airplane motor mounts to specified height.

FOOT-PRESS OPERATOR I 8-78.10. A LABORER, PROCESS. Operates a foot-powered press (m) to shape light sheet metal objects.

FOREMAN 5-91.501. Performs same duties as outlined in FOREMAN I except that the work done does not necessarily require a comparable degree of skill or background in a particular trade or handicraft, and that workers supervised are usually engaged in several occupations; must typically possess a detailed knowledge of process involved. Classifications are made according to the industry in which the work occurs.

FOREMAN (heat treat.) 5-92.393. A classification title for supervisors in this type of work who perform duties as described under FOREMAN II (any ind.).

FOREMAN (aircraft mgr.) 5-92.411. A classification title for supervisors in this industry who perform duties as described under Foreman II (any ind).

FOREMAN (electroplating) 5-92.561. A classification title for supervisors in this industry who perform duties as described under FOREMAN II (any ind.).

FOREMAN 5-92.768. A classification title for supervisors in this type of work who perform duties as described under FOREMAN II. (any ind.).

FORM-BLOCK LAY-OUT MAN 4-75.140**. A LAY-OUT MAN who inscribes metal blocks with guide lines to be followed in the shaping of dies (form block) used in forming aircraft parts by hand or machine..

FORM BUILDER I 5-17.060. Builds forms, fixtures, jigs, or templates of wood or metal for use as guides or standards by other workers in mass production of automobiles; studies blueprint of part for which template, jig, or other fixture is to be built; lays out, cuts and assembles component pieces of wood or metal; checks and measures finished assembly against blueprint.

FORM-BUILDER HELPER 8-78.10**. A LABORER, PROCESS. Performs duties as described under HELPER III.

FORMED *WORK LAY-OUT MAN 9-03.01* A LABORER, PROCESS. Marks cutting lines for trimming excess material from previously formed sheet-metal parts by fitting a template to part, clamping it in place, and scribing the cutting lines around the template: drills holes as shown on template with a portable electric drill.

FORMING-MACHINE OPERATOR IV 6-94.215. Forms sheet metal into tubular or other uniform curved shapes: adjusts forming rolls of forming machine by loosening bolts, moving roll to desired position, and tightening bolts; inserts sheet metal between two feed rolls that force the metal against the forming rolls, forming the flat sheet into the desired shape, as shown on the blueprints from which he works.

FORMING PRESS OPERATOR II 4-88.627* Shapes sheet-metal parts of aircraft, such as small wing and structural elements, fuselage bulkheads, and fairing, in a forming press; studies blueprints to ascertain type and size of die; measures die using rulers, calipers, and squares to make sure it is of the correct size and contour; bolts upper and lower halves of the die to the ram and bed of the press respectively using wrenches; positions metal sheet over lower die and presses a button or operates a treadle to bring the ram down and form the piece; frequently measures stampings to make sure the press is operating satisfactorily; lubricates die using a brush or swab; operates press in the manner described for FORMING-PRESS OPERATOR I. May be specifically designated according to proficiency acquired, as forming-press operator, first class; forming-press operator, second class.

FORMING-PRESS OPERATOR, AUTOMATIC 6-88.627. Tends one or more automatic power presses (m) that form or shape metal articles: loads hopper with metal blanks or articles to be formed, or threads strip of metal or wire through guide rollers; starts machine and watches operation as machine automatically performs function for which it was designed.

FORMING-PRESS OPERATOR HELPER 9-03.01. A LABORER, PROCESS. Performs duties as described under HELPER III.

FRAMER, BODY MINORS; pre-assembler (aircraft mfg.) A SUBASSEMBLER III. A SKELETON ASSEMBLER I who fits together preformed structural parts and minor assemblies in jigs to form segments of fuselage framework that are subsequently riveted or welded together; assembles smaller segments and minor assemblies at a table, ref. BENCH ASSEMBLYMAN. May join several segments or minor assemblies to form a complete fuselage section.

FRICTION-SAWING-MACHINE OPERATOR 6-78.613. Cuts metal stock to specified length, meter, or bevel with an extremely rapid, rotating, metal disk that heats the metal part to burning temperature by friction: measures work and marks line of cut with chalk or scriber; adjusts position of work on table and holds or clamps it in place; starts machine; presses pedal or moves lever to force work against extremely fast rotating disk.

FUEL AND OIL UNITS ASSEMBLER 5-03.540**. Inspects, assembles, and tests pumps, valves, and other parts of the fuel systems of airplanes to insure the efficient functioning of these parts: examines units for conformity to blueprint specifications and for defects by moving levers and valves with the fingers; replaces faulty parts using hand tools, such as pliers and wrenches; measures parts with caliper, verniers, and micrometers to test them for conformity to specified tolerances; puts together parts with the aid of jig or fixture to aline and hold parts while bolting, screwing, or otherwise fastening them together; tests assembled units for leaks by subjecting them to hydraulic and pneumatic pressures using a small, hand pump adjusts units with hand tools to improve their operating performance.

FUEL-SYSTEM INSTALLER 5-03.572**. A MAJOR-ASSEMBLY INSTALLER. Installs airplane fuel systems: drills holes in airplane frames and bolts or screws mountings and brackets in place; mounts tanks and lines, bending lines as necessary by hand to secure a perfect fit; connects the parts of the system and tests it by operation; examines and adjusts fuel system controls and instruments.

FUEL-SYSTEM TESTER (aircraft mfg.) Tests fuel systems, emergency pressure systems, and priming systems for correct operation after installation in airplanes: examines fuel tanks and connecting lines, emergency pressure lines, and primer systems for defects, such as loose connections, faulty tubing, and improper installation; flushes tanks and lines with a special testing fluid to detect leaks, using hand-operated pumps, and observing pressure gages in cockpits to determine whether they are properly installed; adjusts gages indicating amount of fuel in tanks so that red light indicator will register when fuel reaches a specified low level; drains testing liquid from tanks and pipe lines; keeps records of inspections.

FURNACE TENDER, HEAT TREATING 6-87.410. Controls a metallurgical furnace in which metal objects, such as castings and forging tools, are heated to change their physical and chemical properties: kindles or ignites fire; regulates drafts and fuel supply maintain the proscribed temperature for different kinds of metals as indicated by pyrometer.

FUSELAGE ASSEMBLYMAN 5-03.552**. A MAJOR ASSEMBLER. An ASSEMBLYMAN VIII who joins together the component elements of airplane fuselages.

FUSELAGE ASSEMBLYMAN (II) (aircraft mfg.) equipment installer. A SUBASSEMBLY INSTALLER I. An INSTALLATION MECHANIC who fits into airplane fuselage various assemblies and brackets, such as camera supports, radio brackets, and machine gun mounts, bolting parts to permanently attach them or fastening them with spring holders for subsequent riveting. May install panels and cables for air, vacuum, and fire extinguisher controls by drilling bolt holes for attachment of panels, tubes, and cable guides, using an electric hand drill, bolting parts in position, and running cables through tubing.

FUSELAGE COVERER 5-03.010**. An AIRPLANE COVERER who covers fuselages with fabric.

FUSELAGE-FRAME BUILDER 5-03.554**. A SUBASSEMBLER III. A SKELETON ASSEMBLER I who assembles the members of an airplane fuselage in a jig, and temporarily secures them in position with screws or tack welds prior to the final assembly riveting or welding operations.

GAGE GRINDER (mach. shop). A TOOL-GRINDER OPERATOR who does precision grinding on gages used in checking accuracy of work; compares gages with master gages.

GAGE INSPECTOR; gage man. A TOOL INSPECTOR (mach. shop) who tests and approves new gages and inspects gages in use to ascertain that they are maintaining their accuracy.

GAGE MAKER 4-76.210. A TOOL MAKER who specializes in the construction and repair of various types of precision gages used to check the accuracy of machine work.

#GAGER I (mach. shop) small-parts inspector. 6-78.672. Inspects small parts, such as bolts, nuts, screws, and other similar products for defective workmanship, flaws in material, and other discrepancies; uses internal and external gages to examine threads, diameters, and sizes.

GANG-NUT INSTALLER (aircraft mfg.). A SUBASSEMBLY INSTALLER II. Attaches template or takes scale measurements to indicate locations of holes to be drilled in wing structure by GANG-NUT-INSTALLER HELPER for the installation of plates bearing a series of nuts or single nut, used for the attachment of a cover over wing access holes; fits triangular metal patches (splicing plates) over angular junctions of wing surfaces and drills holes for subsequent riveting.

GANG-NUT-INSTALLER HELPER (aircraft mfg.). A LABORER, PROCESS. Drills holes in airplane wing structure for the bolting of single or gang-nut plates, using an electric hand drill and guided by prefit templates or locations marked by GANG-NUT INSTALLER; bolts nut plates into position for subsequent riveting.

GASOLINE DINKEY OPERATOR 7-40.030. Operates a small dinkey engine (m) powered by a gasoline engine, to haul loaded and empty cars upon narrow or standard gage tracks: steps on self-started button or turns hand crank to start power unit; starts, stops and regulates dinkey by manipulating throttle, gear shifts, and brake lever; throws track switches, couples and uncouples cars in shifting, spotting, and hauling cars; if there is no BRAKEMAN, YARD I, oils, greases and makes minor repairs to dinkey.

GENERAL-AIRCRAFT ASSEMBLER II 5-03.552**. A MAJOR ASSEMBLER. Assembles airplane parts, such as wings and fuselage sections, from prefabricated subassemblies, such as bulkheads, flooring sections, and frames, using pneumatic riveting guns, portable electric drills, files, and other hand tools. May specialize in the assembly of one part, such as fuselage forward sections or wings. May be specifically designated according to the degree of proficiency attained as, general-aircraft assembler, first class; general-aircraft assembler, second class.

GENERAL-AIRCRAFT ASSEMBLER III 7-03.562**. A SUBASSEMBLY INSTALLER II. Installs furnishings, such as seats, lockers, and map cases in the interiors of airplanes; fastens small parts, such as ailerons, elevators, and wing tips to airplanes, using a wooden positioning jig and bolting the parts to the airplane; similarly attaches working units, such as wing flaps and bomb-bay doors, by alining the hinges and inserting hinge pins; mounts the operating mechanism, but does not connect the hydraulic lines.

GENERAL TOOL PLANNER (aircraft mfg.) Plans and controls distribution of rivet-sets, crimping and flaring tools, rivet squeezers, and similar hand tools used in an aircraft assembly plant: consults production schedules to determine current and future needs; purchases the tools from manufacturers, and routes their distribution to the tool rooms; keeps a record of all hand tools in use, orders their repair, and determines disposition of obsolete tools.

GISHOLT-LATHE OPERATOR 6-78.163. Operates a lathe (m) with a removable turret which can be converted rapidly to an engine lathe or a turret lathe.

GLASS CUTTER 6-65.240. Cuts various kinds and thicknesses of glass to specified sizes and shapes for automobile windows and windshields, cabinets, china closets, and mirror or picture frames: lays stock sheet of glass on padded surface of a table and places pattern on glass; marks out and cuts pattern with a glass cutter tool; breaks away excess glass by hand or with notched tool; stacks cut part on hand truck.

GLEASON-INDICATOR OPERATOR (auto.mfg.). A TOOL INSPECTOR (mach. shop) who uses a special type of precision measuring gage in checking the accuracy of precision cutting tools.

GLUE MIXER 6-53.432. Prepares hot or cold glue in a steam-jacketed vessel equipped with mechanical agitators: (1) Places dry powdered flake, or cake, animal glue in gluepot; adds cold water and soaks glue for short time; heats gluepot with electricity or gas flame; adds hot water to glue to reduce it to desired consistency and cooks glue; (2) weighs out desired amount of dry casein glue into bowl of mechanical mixer and adds required amount of cold water; starts mixer and mixes water and glue to required consistency.

GLUEMAN III 6-33.914. Spreads glue on adjoining surfaces of wooden pieces and forces the pieces together with a bar clamp until the glue has set: mixes and heats glue in gluepot, fills glue spreader (m) or hand pail with hot glue; brushes glue to joints of boards or spreads glue on edges of boards by drawing them across roller of spreader; fits glued surfaces together, clamps unit in bar clamp, and forces surfaces together by applying pressure to clamp; removes unit from clamp when glue is set. May drive nails or pins through joints to reinforce them.

GLUEMAN, ASSEMBLY 7-02.321 A SUBASSEMBLER, Glues together pieces of wood previously cut to specifications: places parts to be glued into jig by hand, fitting together grooves or dovetailing; daubs glue with a swab or brush between contact surfaces; tightens hand screws on jig, forcing parts together; unclamps and removes dried assemblies from jigs. May reinforce joints with screws.

GRADER VIII 4-29.510 Examines and sorts milled or rough-sawed lumber according to designated standards: examines, on all sides, milled lumber as it passes on conveyor belt or as it is placed on table for defects, such as knots, faulty edges, stains, and unsatisfactory machine work; routes faulty pieces to workers who dispose of them; removes satisfactory pieces and places them in proper bin or truck; sorts them into classes which are determined by the presence of blemishes, such as worm holes, small knots, or off-coloring. May scale board footage in each piece and record results.

May be specifically designated according to type of lumber graded, such as BEVEL-SIDING GRADER; DRY-LUMBER GRADER; MILLED-LUMBER GRADER; MOLDING GRADER; RE-RUN-LUMBER GRADER; ROUGH-LUMBER GRADER.

GRAVITY-FEED-HACKSAWING-MACHINE OPERATOR 8-78.01. A LABORER, PROCESS. A HACKSAWING-MACHINE OPERATOR who saws metal stock to length on a machine in which the blade is fed through the metal by the weight of the frame in which the blade is mounted.

GRINDER (auto. mfg.) disker; dresser; metal dresser; metal finisher; metal polisher; polisher. 6-77.040. Operates a portable electric machine into which a variety of tools can be inserted, such as coarse, medium, and fine grinding wheels, wire brushes, and cloth buffing wheels, to smooth and polish automobile bodies and parts prior to painting; performs any one or combination of the duties described under BUFFER I; PORTABLE GRINDER (any ind.); WIRE-BRUSH MAN (any ind.).

GROMMET-MACHINE OPERATOR 9-03.01**. A LABORER, PROCESS. Inserts grommets (metal eyelets) in canvas goods by operating a grommet machine: (1) measures position on canvas for insertion of grommets and marks with pencil; starts machine and slides canvas over bed of machine until pencil mark is above slot in which grommet rests; depresses treadle causing grommet to cut through canvas and be crimped into the material; (2) positions fabric under cutting punch of machine according to markings and depresses a pedal to cut the grommet holes; places bottom section of eyelet inbed of machine and inserts top section into hole in fabric; fits top section of eyelet over the bottom section and depresses a pedal to rivet both sections of eyelet together and fasten it to the material.

GROUNDS KEEPER I 3-40.04. Maintains and protects grounds surrounding buildings of an industrial or business concern, race track, or other property; mows lawns, trims hedges, rakes and burns leaves and refuse, trims driveway and sidewalk edges, using spades and hose; in winter, shovels snow from driveways and sidewalks, and spreads sand, salt, or ashes on icy surfaces to prevent slipping. May plant and maintain flower beds, select bushes and flowers to be planted, and perform other landscaping duties, May supervise worker doing the less skilled duties entailed in the upkeep of grounds.

GROUP LEADER III General Term**. A term used in this industry to designate a FOREMAN I who supervises a group of workmen engaged either in one craft as SHEET METAL WORKER, AIRCRAFT I, or in one type of assembly work as FITTING MAN and SKELETON ASSEMBLER. Must be skilled in the particular craft or type of activity supervised. Usually designated according to the department in which he functions, as group leader (wood-tool dept.): group leader (drop-hammer dept.). Classifications are made according to specific jobs in which the worker is skilled.

GUIDE, FACTORY 2-36.31*. Conducts visitors and observers about an industrial establishment: leads the way to the site or process to be observed; explains operation of various processes and machines; answers questions and supplies information on the work of the department or departments visited.

GUN-AND-TURRET REWORKER (aircraft mfg.) Inspects, adjusts, and repairs guns and gun turrets prior to installation in airplanes: disassembles and cleans guns, using solvent and cleaning rags; oils and reassembles gun parts, and makes adjustments and minor repairs to insure correct operation, using hand tools; assembles and affixes mounting attachments, testing them for accuracy of mechanical operation; checks turrets for wiring and loose and short bolts, using special electrical testing equipment and precision measuring instruments; installs gun sights and adjusts them according to specifications; tests mechanical and electrical operation of turrets by placing in work stand to assimilate actual operating conditions, making adjustments or repairs as necessary.

HACKSAWING-MACHINE OPERATOR A LABORER, PROCESS. Cuts metal stock to length on a power-driven hacksaw; measures work and marks line of cut with chalk or scriber; adjusts position of work on machine and clamps it in vise; shifts weights or moves lever to select appropriate feed speed; starts machine; may set a nozzle to direct a stream of lubricant over the saw cut; removes work when machine stops automatically at end of cut; replaces dull or broken saw blades by loosening thumb-screw, hooking new blade over hooks and tightening thumb-screw. Sometimes specifically designated according to type of feed, as GRAVITY-FEED HACKSAWING-MACHINE OPERATOR; HYDRAULIC-FEED-HACKSAWING MACHINE OPERATOR; POSITIVE-FEED-HACKSAWING-MACHINE OPERATOR; SPRING-TENSION-FEED-HACKSAWING-MACHINE OPERATOR.

HAND DRILLER AND TRIMMER 9-03.01**. A LABORER, PROCESS. Drills holes in sheet-metal parts, using an electic hand drill, and forms and cuts slots in the parts with a hand router (m), using a jig to guide the router.

HARDENER II 4-87.220. Increases hardness of carbon steel objects by heating them to a predetermined temperature and cooling them quickly by quenching them in a suitable bath of oil, water or the like.

HARDNESS INSPECTOR 4-87.910. Checks degree of hardness of metal parts after heat treating; selects clean flat surface for test and places part in tester; operates tester to force a steel ball of diamond-pointed hammer to rebound on the surface; notes reading on dial or indicator to determine dimensions of indentation, depth of penetration, or height of rebound from which hardness is determined; rejects parts that do not comply with hardness standards.

HEAT TREATER II 4-87.010. Alters the physical and chemical properties of the steel of such parts as dies, cutters, and machine parts, to produce a specified degree of hardness, toughness, or strength by an established process of controlled heating and cooling.

HEAT TREATER III 4-87.020*. Alters the physical properties of aircraft metals, such as aluminum, duraluminum, and steel alloys to desired specifications by heating to a predetermined temperature in a furnace or preheated chemical bath (such as potassium or sodium nitrate) and quenching the metal in a suitable bath of oil or water; repeats the heating and quenching operations if necessary or permits the metal to cool naturally to attain desired results.

HEAT-TREATER HELPER I 8-87.10*. Assists HEAT TREATER III by cleaning metal parts and stringing them together with wire prior to heat treating: protects threaded parts by covering threads with asbestos cement; loads parts on hand truck and pushes to furnace.

HEAT-TREATER HELPER II 6-87.020**. Heat treats small machine parts and castings, working under the direction of HEAT TREATER III: suspends parts in chemical baths and regulates a gas torch to produce the desired temperature: quenches the parts in appropriate oil and water baths.

HEAT-AND-VENT INSTALLER (aircraft mfg.) A SUBASSEMBLY INSTALLER II. Installs prefit insulation-covered metal ducts of fuselage heating and ventilating systems, overlapping the edges: joins overlapping surfaces by drilling holes with an electric hand drill, inserting bolts and taping insulation over joints; may fit metal collars over ducts at specified positions, drilling bolt holes and bolting collars to hold ducts in place.

HEATING-AND-VENTILATING-INSTALLATION ASSEMBLER 5-03.562**. A SUBASSEMBLY INSTALLER I. Installs heating and ventilating apparatus and controls in partially completed airplanes according to specifications: bolts steam generating boiler, steam bottle, and radiator to previously placed brackets; installs steam and water pipes, attaching them with couplings to appropriate units; connects control and safety valves at specified points; installs pulleys and runs control cables over them from the pipe valves to the pilot's compartment; bolts or screws air ducts to brackets or specified structural members; insulates pipes, ducts, steam bottle, and valves, either by wrapping parts in asbestos or similar material, or by placing a boot (heavy canvas covering) around part and packing it with insulating material; usually brushes a protective coating of shellac over the insulation covering. May install control levers in pilot's compartment and attach control cables to levers.

HIGH-SPEED-FRICTION-DRILL-PRESS OPERATOR 6-78.083. Performs such operations as drilling, countersinking, reaming, and sometimes tapping, on metal objects with a drill press (m); fastens drill, reamer, or tap in machine, alines work on table of machine, and starts machine; pulls hand lever to feed tool to work or engages automatic feed; withdraws tool from work and stops machine. Sometimes specifically designated according to type of machine, as DRILLING-AND-TAPPING-MACHINE OPERATOR; HIGH-SPEED-FRICTION-DRILL-PRESS OPERATOR: HORIZONTAL-DRILL-PRESS OPERATOR: UPRIGHT-DRILL-PRESS OPERATOR: VERTICAL DRILL-PRESS OPERATOR; VERTICAL-DRILL-PRESS OPERATOR, AUTOMATIC FEED.

HORIZONTAL-BORING-AND-MILLING-MACHINE OPERATOR 4-78.042. Sets up, adjusts, and operates a machine that resembles a horizontal boring mill (m), but which is adapted to a wide variety of machining operations, such as drilling, boring, and milling; alines work on table of machine and clamps or bolts it; selects appropriate cutting table and tools and fastens them on spindle of machine; moves levers to adjust spindle and feeds speeds for the work; turns handwheels to adjust positions of cable and spindle; starts machine; engages automatic feed or turns handwheel to feed cutting tool into or along work; stops machine and measures work or changes cutting tools as required; removes completed work from machine.

HORIZONTAL-BORING-MILL OPERATOR (mach. shop) spec. for BORING-MILL OPERATOR.

HORIZONTAL-BROACHING-MACHINE OPERATOR (mach. shop) spec. for BROACHING-MACHINE OPERATOR.

HORIZONTAL-DRILL-PRESS OPERATOR 6-78.083. Performs such operations, as drilling, countersinking, reaming, and sometimes tapping, on metal objects with a drill press (m); fastens drill, reamer, or tap in machine, alines work on table of machine, and starts machine; pulls hand lever to feed tool to work or engages automatic feed; withdraws tool from work and stops machine.

Sometimes specifically designated according to type of machine, as DRILLING-AND-TAPPING-MACHINE OPERATOR; HIGH-SPEED; FRICTION-DRILL-PRESS OPERATOR; VERTICAL-DRILL-PRESS OPERATOR; VERTICAL-DRILL-PRESS OPERATOR; AUTOMATIC FEED.

HORIZONTAL-MILLING-MACHINE OPERATOR 4-78.031. A MILLING-MACHINE-OPERATOR II who works with a milling machine designed to support and rotate the milling cutter with a horizontal spindle.

HORIZONTAL-SHAPER OPERATOR 4-78.061. Planes, shapes, or cuts grooves in metal objects with a machine that cuts with a tool held in a reciprocating head (ram): bolts or clamps work on table of machine; selects appropriate cutting tool and bolts it in tool post on machine: selects and moves levers or shifts belts to adjust machine to cut, and feed the tool at appropriate speeds; moves ram of machine slowly by hand or power and sets reversing mechanism to limit ram stroke to travel required; turns handwheel to raise or lower table until work is near cutting tool; starts machine; turns crank on top of tool slide to adjust depth of cut; turns crank or handwheel to feed cutting tool slide to adjust depth of cut; turns crank or handwheel to feed cutting tool into or across work or engages automatic feed; stops machine and measures work to verify its dimensions; may change position of work on table or change cutting tools as work requires; stops machine when work is completed and removes work from machine. Sometimes specifically designated according to type of machine as, HORIZONTAL-SHAPER OPERATOR; VERTICAL-SHAPER OPERATOR.

HY-CYCLE-MILL OPERATOR (aircraft mfg.). A MILLING-MACHINE OPERATOR II who operates a milling machine equipped with cutters which rotate at a very high rate of speed and are designed to be used on aircraft metals, such as aluminum, and aluminum or magnesium alloys.

HYDRAULIC-CONTROL UNIT ASSEMBLER 5-03.540**. Inspects, assembles, and tests hydraulic pumps, pressure-regulating valves, and tanks of the hydraulic control systems of aircraft to insure their efficient operation; examines all parts of a unit for conformity to blueprint specifications, moving levers, valves, and plungers to make certain of their free and correct action; measures parts with calipers, verniers, or micrometers to determine whether or not they are within the prescribed tolerances; bolts, screws, and otherwise fastens parts together using a jig or fixture to aline and position the parts, and using ordinary and specialized hand tools to tighten the fittings; tests assembled units under prescribed pressures by connecting them to a small, hand pump and forcing fluid into the unit, noting leaks and other defects; makes adjustments with hand tools; laps and hones interior cylindrical surfaces to fine tolerances using a power- or hand-operated cylindrical tool dipped in a fine moist abrasive; seals pores in small castings by forcing chemical compounds, such as sodium sillicate, into the pores with compressed air; bakes treated castings in a small oven to harden the compound.

HYDRAULIC-FEED-DRILL OPERATOR 6-78.081. A MULTIPLE-SPINDLE-DRILL-PRESS OPERATOR or a SINGLE-SPINDLE-DRILL-PRESS OPERATOR who operates a drill press, the drill feed of which is obtained from hydraulic pressure instead of through a mechanical linkage.

HYDRAULIC-FEED-HACKSAWING-MACHINE OPERATOR 8-78.10. A LABORER, PROCESS. A HACKSAWING-MACHINE OPERATOR who saws metal stock to length on a machine in which the blade is fed downward through the metal by a hydraulic feed mechanism acting on the frame in which the blade is mounted.

HYDRAULIC-FIELD-SERVICE MECHANIC 5-80.450**. Tests and adjusts airplane hydraulic units, such as pumps and pressure-regulating valves, preparatory to test flights; visually inspects hydraulic lines for leaks, testing and tightening connections with wrenches; examines fluid reservoirs on variable-pitch propellers, brakes, and other units, adding fluid as needed; checks air pressure in shock absorbers with a gage, inflating them to desired pressure, using a hand pump; accompanies airplanes on ground tests, diagnosing operating defects in hydraulic system; replaces faulty hydraulic units, such as landing gear retractors and flight-control mechanisms, using wrenches, pliers, and other common hand tools.

HYDRAULIC-PLANER OPERATOR (mach. shop). A PLANER OPERATOR II who runs a planer (m), the table travel of which is obtained from hydraulic pressure instead of through a mechanical drive.

HYDRAULIC-STRUT ASSEMBLER 5-03.540**. A HYDRAULIC-CONTROL-UNIT ASSEMBLER who inspects, assembles, and tests the actuating cylinders and piston of hydraulically operated shock-absorbing devices used on airplane landing gears to insure their satisfactory performance in actual operation.

HYDRAULIC-SYSTEM CHECKER 5-03.572**. A MAJOR-ASSEMBLY INSTALLER. Joins together the hydraulic system units and connects them to the actuating mechanisms; joins preformed pipe sections, fitting them to each other and to the airplane by hand bending; connects lines to the hydraulic control systems which operate landing gears, wing flaps, ventilators, brakes and other hydraulically operated equipment; fills the hydraulic system reservoir with fluid and pumps it throughout the system; inspects the system (tubing and activating cylinders) for leaks, tightening loose connections and replacing defective tubing, using hand tools; tests the various sections of the system, such as the landing gear, by operation, replacing faulty cylinders with new ones.

HYDRAULIC TESTER II 5-03.840**. Tests and adjusts airplane hydraulic systems, such as those used to actuate landing gears and wing flaps, before installation on the airplanes; determines proper testing procedure on the basis of the construction of the parts and employing blue prints and charts; connects parts to a hydraulic test board, attaching any gage needed to supplement the board; starts pump which forces oil through the unit causing the working parts to operate and notes the pressure required to do so, adjusts mechanism to insure smooth operation, using hand tools.

HYDRAULICS-AND-FUEL-SYSTEM ASSEMBLER (aircraft mfg.) A SUBASSEMBLY INSTALLER II. A FITTER XV who installs tubing for airplane hydraulic and fuel systems. Workers may be classified according to degree of proficiency acquired, as hydraulics-and-fuel-system assembler, class a; hydraulics-and-fuel-system assembler, class b; hydraulics-and-fuel system assembler, class c.

HYDRO-PRESS CHECKER 6-88.628*. Supervises the loading and unloading of sheet-metal parts on a hydraulic press (m) equipped with loading tables; supplies HYDRO-PRESS TABLE LOADERS with sheet-metal parts and selects forming dies; determines the initial placement of dies and rubber mats in the machine according to the reaction of the sheet metal being shaped; compares shaped parts with template for correct dimensions; makes necessary adjustments to dies and rubber mats to correct any defects.

HYDRO-PRESS OPERATOR 4-88.632*. Controls the operation of a large, hydraulic power-press which shapes sheet-metal airplane parts; manually positions the lower dies on the press bed; cleans die surfaces and oils the die and material to lessen friction during the shaping operation; positions rubber pads over sheet metal on dies to prevent fracturing of metal being shaped; judges pressure needed according to amount of draw to be made; sets pressure control and starts machine, causing the ram to descend and shape the metal. If press is equipped with loading tables, pushes control buttons to position under the ram, a press table on which dies, sheet metal, and rubber pads were previously positioned. May be specifically designated according to the degree of proficiency acquired as; Hydro-press operator, first class; hydro-press operator, second class.

HYDRO-PRESS-OPERATOR HELPER 9-03.01**. A LABORER, PROCESS. Performs duties as described under HELPER III.

HYDRO-PRESS TABLE LOADER 9-03.01*. A LABORER, PROCESS. Loads hydro-press table with forming and shearing dies and sheet-metal blanks as directed by HYDRO-PRESS CHECKER: wipes die surfaces to remove dirt and other foreign substances; positions sheet-metal blanks on dies, placing rubber pads over blanks to provide more direct pressure and protect metal surfaces; unloads table when it emerges from press, removing rubber pads and formed or sheared parts.

INBOARD-WING ASSEMBLYMAN (aircraft mfg.) A SUBASSEMBLY INSTALLER II. Works as a member of a crew that installs preassembled parts and accessories on inboard sections of airplane wings: fits into position air ducts, light lens and frames, leading edges, brackets, and fairing, guided by templates, layouts, pilot holes, or taking measurements to obtain accurate alinement; trims parts as necessary with snips; drills and countersinks holes with an electric hand drill; secures parts with bolts or temporarily fastens them with spring holders for subsequent riveting; installs prefitted and drilled skin sections, ref. SKIN INSTALLER, to underside of trailing edge, refitting skin, removing dents, and drilling holes as necessary.

INDUSTRIAL ENGINEER 0-18.01. A classification title for persons meeting the educational, experience, or legal qualifications for the general field of industrial engineering that are established by engineering colleges, industrial engineering societies, or licensing authorities. Persons in this group usually specialize in one or more of the following branches of industrial engineering: the planning of the flow of work through the plant; the conducting of time and production studies; the planning of plant facilities to increase the efficiency of the workers; the setting up of wage scales with the accompanying piece rate or bonus plans; and the conducting of safety campaigns among the workers to reduce industrial accidents. The following occupations are typical of those classified under this title: FACTORY-LAY-OUT-MAN; SAFETY ENGINEER II; TIME-STUDY ENGINEER.

INSPECTION-RECORD CLERK (aircraft mfg.). A TOOL CLERK who receives, stores, and issues inspected and re-worked tools such as templates, gages, and jigs, used in the manufacture of airplanes; maintains records of tools received and their location within the plant. May be required to type file records for new tools.

INSPECTOR 4-78.671. Examines parts or products for flaws or defects and checks dimensions against blueprint specifications, using precision devices for measuring, such as calipers, and micrometers. May test hardness of steel parts with Rockwell hardness tester (m) scleroscope (m), or other device.

INSPECTOR 6-74.230.* Examines chrome and nickel-plated objects, such as automobile body hardware, including door handles, radiator grills, and dashboard fittings, and plumbing fixtures and other small parts for rough and burned spots, insufficient plating and polishing, and other defects; discards faulty parts for reprocessing or salvage.

INSPECTOR, HAMMERS AND PRESSES (aircraft mfg.) Performs routine inspection of partially formed parts produced on drop hammers, planishing hammers, and hydro presses to determine defects in materials and workmanship: Visually examines formed metal for dents, scratches, stains, and tears; inspects parts for accuracy of forming and contour, using jigs, templates, dies, or blueprints as guides; gages thickness of metal using micrometers; performs simple chemical tests to determine composition of metal; stamps approved parts, ref. STAMPER I(any ind.); attaches rejection slips to defective parts; keeps records of parts inspected.

INSPECTOR, STRUCTURAL ASSEMBLY (aircraft mfg.) An INSPECTOR (mach. shop) who examines structural aircraft assemblies for workmanship and conformity to specifications.

INSTALLATION ENGINEER 0-19.91. A MECHANICAL ENGINEER. Specializes in installing equipment in buildings, such as heating, ventilating, and incinerator equipment.

INSTALLATION MECHANIC 5-03.562**. A SUBASSEMBLY INSTALLER I. Bolts, screws, and rivets fittings, parts, and auxiliary equipment, such as pulley brackets, radio tables, doors, windows, armament, and turrets to aircraft; locates position of parts following blueprints and using ruler or locating jig; drills rivet and bolt holes with an electric drill; rivets parts; tightens bolts, nuts, and screws using wrenches and screw drivers; files and scrapes parts to a more perfect fit; opens and closes doors and moves parts and levers after installation to make certain they operate freely; demonstrates methods of installation to less experienced workers. Usually specifically designated according to proficiency acquired, as installation mechanic, first class; installation mechanic, second class.

INSTALLATION-MECHANIC HELPER 9-03.01**. A LABORER, PROCESS. Performs duties as described under HELPER III.

INSTRUMENT INSPECTOR 5-83.973**. Inspects, tests, and adjusts airplane instruments; usually examines the instruments for physical defects, such as broken glass, missing indicators, and dents; tests pressure operated instruments, such as altimeters, air-speed indicators, and oil and fuel gages, vacuum operated instruments, such as bank and turn indicators, and directional gyroscopes, and electrically operated instruments, such as oil and cylinder temperature gages, using special testing equipment which simulates actual conditions, and standardized instruments, adjusts instruments, removing the glass, turning set screws and substituting fresh needles; fills in rejection tags for defective instruments, explaining his finding.

INSTRUMENT MAN IV 5-83.972*. Removes, tests, repairs, calibrates, and reinstalls aircraft instruments, such as air speed indicators, gyro dompasses, altimeters, turn and bank indicators, tachometers, and engine and carburetor temperature indicators, using small wrenches, pliers, tweezers, and other small tools and various testing devices, such as a vacuum pump tester; makes new parts if replacement parts are not available, using precision hand and power drills. A thorough knowledge of the functions and operation of the various instruments is required.

INSTRUMENT-MAN HELPER 9-03.01**. A LABORER, PROCESS. Assists INSTRUMENT MAN IV to install instruments in airplane cockpits: drills holes as directed, using a portable electric drill: mounts simple instruments on panels; connects wires and tubing to mounted instruments as instructed.

INSTRUMENT-PANEL ASSEMBLER 5-03.554**. Prepares airplane instrument and switch panels for installation: assembles prefabricated parts to make subunits, such as electrical junction boxes and instrument brackets; positions assembled units on panels and clamps them together; drills holes through panels and parts with an electric hand drill according to markings or blueprint specifications, reaming, tapping, and countersinking the drilled holes as necessary with a drill-press (m) and hand tools; rivets, bolts, and screws parts to panels with hand and pneumatic tools; fastens instruments, gages, knobs, switches, and levers to the assembled panels, using bolts, screws, and clamps; adjusts and sets instrument indicator hands; attaches short lengths of metal and rubber tubing to backs of valves and instruments on the instrument panel and tests the vacuum and pressure lines for leaks by blowing into or sucking at the ends of the attached tubing.

INTERNAL-BROACHING-MACHINE OPERATOR 6-78.051. A BROACHING-MACHINE OPERATOR who works with a machine that pushes or pulls the broach through a hole or opening in the work.

INTERNAL-GRINDER OPERATOR I 4-78.512. Operates a machine that grinds to accurate dimensions and desired finish the internal cylindrical surfaces of openings in metal parts into which another part is to fit, such as hubs of gears, pulleys, and wheels; clamps part in machine, securing alining piece with the grinding wheel; starts grinding wheel, and advances wheel to piece by means of hand controls; operates other controls to regulate cutting position and depth of cutting; withdraws wheel from piece and gages piece, accuracies of 0.0005 inch sometimes being required; repeats grinding and gaging until piece is satisfactory; removes piece from clamp. May dress tools and adjust machine.

INTERNAL-GRINDER OPERATOR II 6-78.523*. Finishes internal cylindrical metal openings on an internal-grinding machine, performing simple, repetitive, precision grinding operations, as contrasted to the INTERNAL GRINDER OPERATOR I who is capable of performing a variety of complicated grinding operations, using the same machine: fastens workpiece in spindle; feeds abrasive wheel into work by turning hand wheel or using automatic feed device, or, where automatic machines are used; observes automatic machine operations, frequently tending several machines; removes work when completed; gages cut, using micrometers, calipers, and verniers. May make simple set-ups, although frequently this is done by another worker, usually a JOB SETTER II.

JANITOR I 2-84.10. Keeps public parts of building in clean, orderly condition, and good state of repair, and operates furnaces and boilers to provide heat and hot water for tenants: sweeps , mops, and scrubs public halls and stairways; tends the furnace, stoking coal and removing clinkers and ashes; removes litter and wastepaper from offices or apartments, and empties tenants' garbage pails, disposes of ashes and refuse, trucking or rolling the cans to the street for pick-up by local sanitation department; makes minor repairs to defective plumbing, electrical wiring, or other parts of the building; replaces burned-out electric lamps in public halls; cleans sidewalks of snow or debris. May grease elevator slides and clean elevator pits. In large establishments, tending the furnace may be the full-time job of a FIREMAN, LOW PRESSURE.

JIG-BORING-MACHINE OPERATOR 4-78.043. Uses a precision boring machine to make holes with extreme accuracy in such objects as boring jigs: clamps work to be bored on table of machine: places center punching tool or center drill in chuck on spindle of machine; turns handwheels and reads calibrated dials on handwheels shafts to locate center-marking punch or drill accurately over points on work where holes are to be drilled; lowers spindle by turning handwheel to mark locations for hole centers; replaces center marking tool in chuck with drill of appropriate size; starts machine; positions drill over center mark; turns handwheel or engages automatic feed to drill holes; replaces drill in chuck with boring tool or end cutting reamer, positions boring tool or reamer over drilled hole; feeds tool or reamer through hole to cut it very accurately to size. May be specifically designated according to make of machine, as SWISS-JIG-BORING-MACHINE OPERATOR.

JIG INSPECTOR 4-76.220. A TOOL INSPECTOR who tests and approves new jigs and inspects jigs in use to ascertain that they are maintaining their accuracy, trying jigs on machines to be sure they work and facilitate production.

JIG MAKER II 4-76.210. A TOOL MAKER who specializes in the making and repairing of jigs.

JIGSAW OPERATOR I 6-33.212. Operates a machine equipped with a narrow thin, vertically-reciprocating saw blade to make irregular internal and external cuts on wooden stock: (1) lays stock on machine table; detaches saw blade from machine, inserts it through previously bored hole in stock and re-attaches saw to machine, using hand tools, starts machine; manipulates stock against saw at marked outline to make internal cuts, (2) starts machine; lays stock on table and guides stock against saw at marked outline to make irregular outside cuts. May mark outline of work to be cut with pattern and pencil.

JIGSAW OPERATOR II 6-94.232**. Operates a Jigsaw (m) to make irregular internal and external cuts on sheet-metal stock, performing duties as described under JIGSAW OPERATOR I.

JIGSAW OPERATOR IV 6-78.617**. Makes internal cuts in preformed sheet-metal airplane parts, using a power saw equipped with a narrow reciprocating blade; determines from blueprints and work order the kind of cuts to be made; detaches saw blade from holders, positions metal part on saw table, and re-attaches the blade inserting it through a hole previously drilled in the material; starts saw and cuts away the material along prescribed lines; detaches saw blade and removes part.

JIG-SET-UP MAN (aircraft mfg.) A term applied to workers in this industry who are engaged in setting up airplane parts in a jig preparatory to welding or riveting. Classifications are made according to the part worked on, as AIR-MAZE ASSEMBLER; COWLING-INSTALLATION ASSEMBLER; MOTOR-MOUNT MECHANIC; SHROUDMAN II; TRUSS ASSEMBLER.

JOB ANALYST 0-68.72. Prepares or secures occupational descriptions of jobs in an industrial, commerical or other organization to afford employment office better placement of qualified workers; studies each job and writes a description of the elements of the job and the qualifications needed by an applicant; charts organization set-up, performs related occupational research.

JOB SETTER II 4-75.160. Installs cutting tools in various types of automatic or semi-automatic machinery: adjusts guides, stops, working tables of machine, and other controls to handle the size of stock to be machined; operates and adjusts machine he sets-up until accurate production (based on blue-printing, specifications, patterns, or templates) has been achieved; checks production with precision gages, often to tolerances of 0.0005 inch; turns machine over to regular operator when it is producing satisfactorily.

JOGGLE-PRESS OPERATOR I 4-88.624*. Sets up, adjusts, and operates a power press to bend or flange reinforcing offsets (joggles) in aluminum alloy sheet-metal parts which are too narrow or small to be fabricated on a brake machine; clamps jig on machine bed and attached stamping plate (die) to press head; adjusts machine to blueprint specifications (.001 inch tolerance), using verniers to measure test impression; places metal parts in job one at a time and depresses pedal to set machine in operation; inspects each piece for cracks along the bent area.

JOINTER OPERATOR III 6-33.462. Sets up and operates a machine to reduce wood stock to specified width or to smooth, bevel, rabbet or otherwise shape the edges to produce tight fitting joints when edges are pressed or glued together; fits cutter knives in cutter head and tightens setscrews with a wrench; places fence to guide stock at specified angle to cutting knives; places stock on edge against fence on machine table; starts machine and slides over rotating cutting knives, using fence as a guide; checks out against blueprints or sketches, using miter gages or squares; makes necessary adjustments; feeds stock across cutting knives; turns part over and machines other edge; checks width of stock; places finished stock on hand truck.

JONES-AND-LAMSON-LATHE OPERATOR 4-78.021. Shapes external and internal cylindrical surfaces of metal objects, such as castings or forgings, which are best machined when held in a chuck. The machine is semi-automatic, being equipped with a turret that can be set up to present each of the tools required for a cycle of machining operations to the work in sequence. May be specifically designated according to make of lathe (m), such as JONES-AND-LAMSON-LATHE OPERATOR; LIBBY-LATHE OPERATOR.

KELLER-MACHINE OPERATOR (auto. mfg.) 4-76.910. Sets up, operates and may repair a machine that automatically reproduces a wood pattern, or a metal die, by cutting (sculpturing) a press die, forge die, or other part out of a block of metal (the cutting tool is guided by a complicated, electro-magnetic control actuated by a pantograph-like tracing tool which scans the surface of the pattern, each movement of the tracer across a surface of the pattern resulting in a similar movement of the cutting tool along the corresponding plane of the steel block): clamps and bolts wooden pattern or die to be reproduced to upper faceplate of machine, alined with the tracing tool; bolts steel block, from which die is to be cut, to lower faceplate, alined with the cutting tool and parallel with the pattern in all planes; sets the tracing tool and cutting tool to a common base point on the pattern and block; starts machine and allows it to run, often for periods of several days, automatically cutting die out of block of steel; watches machine constantly to check on proper operation and to detect and change worn, dulled, defective, or broken tools. May make a second, finer machining of the die (the first cut is accurate to 1/16 inch) by changing to a finer tracer and a finer cutting tool. Unclamps and removes pattern and die from machine. May repair and adjust machine.

KEY FLOORMAN 1-38.04**. A STOCK-CONTROL CLERK who routes sheet metal for shearing operations to maintain required standards of production; supervises measuring of sheet metal according to specifications so that minimum waste of metal will occur in shearing.

KICK-PRESS OPERATOR II 6-88.627**. A FORMING-PRESS OPERATOR I who tends a pedal actuated power press to shape small aircraft parts, such as brackets, clips, and clamps and to perform shearing operations, such as rounding corners and making angular cuts, according to specifications. May replace shaping and cutting dies with a punching tool to punch holes in sheet-metal parts.

KICK-PRESS OPERATOR IV 6-88.625**. Forms and punches holes in aircraft sheet metal with a foot-operated punch; installs proper sized dies and adjusts stroke of press; positions metal between dies, and causes upper die to descend by kicking or depressing a foot pedal.

KNUCKLE BENDER (aircraft mfg.). A PIPE-BENDER, HOT BLOCK who bends knuckles, attached to one end of heavy steel tubes, to specifications for use as frames for airplane tail wheels.

KNUCKLE-BENDER HELPER (aircraft mfg.). A LABORER, PROCESS. Packs pipe and knuckle with sand so that knuckle may be bent without distortion; seals ends by tapping in wooden plugs; assists KNUCKLE-BENDER to position knuckle in bending block; attaches cable from winch to one end of bending bar; cranks winch to pull bending bar downward and bends knuckle over bending block. May heat knuckle and bending block prior to bending operations, using an acetylene torch.

LABORER 9-65.21. A classification title for jobs in this type of work listed under LABORER (any ind.).

LABORER 9-63.76. A classification title for jobs in this type of work listed under LABORER (any ind.), and also for the following jobs: KILN STACKER II; KILN-TRUCK UNLOADER; LUMBER HANDLER; LUMBERMAN'S JANITOR; MOUNTER VII; STICK BOY OR MAN. See all LABORER, PROCESS.

LABORER 9-65.28. A classification title for jobs in this type of work listed under LABORER (any ind.).

LABORER 9-65.43. A classification title for jobs in this industry listed under LABORER (any ind.).

LABORER, 9-65.64. A classification title for jobs in this type of work listed under LABORER (any ind.), and also for the following jobs: BRIQUETTE-MACHINE OPERATOR; CLEANER; OIL EXTRACTOR; RIGGER V; SCRAP WHEELER II.

LABORER, PROCESS 8-33.11. A classification title for jobs in this type of work listed under LABORER, PROCESS (any ind.), and also for the following jobs: CARVING SANDER, CUT-OFF-SAW FEEDER; CUT-OFF-SAW-OFF-BEARER; CUT-OFF-SAW-OPERATOR HELPER; HOG FEEDER III; MATCHER FEEDER; MATCHER OFF-BEARER; MILLMAN HELPER II; MOLDER FEEDER; MOLDER OFF-BEARER; MOLDER OPERATOR HELPER II; NAILER IV; OFF-BEARER V; PLANER FEEDER II; PLANER OFF-BEARER; RIPSAW OFF-BEARER; SANDER HAND; SANDING-MACHINE OFF-BEARER II.

LABORER, PROCESS (electroplating) 8-74.10. A classification title for jobs in this type of work listed under LABORER, PROCESS (any ind.).

LABORER, PROCESS (heat treat.) 8-87.10. A classification title for jobs in this type of work listed under LABORER, PROCESS (any ind.).

LABORER, PROCESS 9-03.01. A classification title for jobs in this industry listed under LABORER, PROCESS (any ind.).

LANDING-GEAR-AND-DOOR INSTALLER (aircraft mfg.) A SUBASSEMBLY INSTALLER II. Attaches to airplanes preassembled landing gears and various doors, such as bomb bay, rear gunner's access, nose wheel, and nachelle doors, and reworks doors as necessary to secure correct fit: installs main, emergency, and nose-wheel landing gears by bolting assemblies into place, inserting washers as necessary to secure correct alinement, and connecting brake system and activating mechanisms, using various hand tools; installs doors by drilling bolt or rivet holes for hinge connections, using an electric hand tool, inserting bolts or clamping temporary spring fasteners, and inserting hinge pins, using a hand drill; connects doors to activating mechanisms, using bolts and hand tools; refits doors when required for correct alinement, using scales, calipers and squares, by trimming edges with snips and files and reworking with hand tools. May be specifically designated according to degree of proficiency acquired, as landing-gear-and-door installer, class a; landing-gear-and-door installer, class b; landing-gear-and-door installer, class c.

LANDING-GEAR ASSEMBLER 5-03.554**. Puts together the component parts of airplane landing gears using ordinary and specialized hand tools, and tests the landing gears to insure their efficient and accurate performance when installed in an airplane: inspects struts and fittings for defects and compares them with blueprint specifications to ascertain the tolerances and assembly procedure; bolts and screws parts together using a jig or fixture to aline the pieces in the proper position before completely tightening the fastenings; tests the landing gear for operating efficiency by filling the shock absorbing cylinders and reservoir with special liquid, pumping in air to the prescribed pressure, and noting leaks and dial readings, balances wheels in a special machine to determine the heavy side, the screws or otherwise attaches small weights to the lighter side of the wheel until it has reached equilibrium; performs other necessary functions to complete the installation of the wheel.

LANDING-GEAR ASSEMBLER HELPER 9-03.01**. Performs duties as described under HELPER III.

LANDING-WHEEL INSTALLER AND FUNCTIONAL TESTER (aircraft mfg.). Cleans and installs landing wheels and makes functional tests of airplane landing gear: pries out retaining ring of landing wheels and removes bearings and parts; cleans rust preventive from bearings and machined parts, such as brake drums, using special solvent; packs bearings with grease and reassembles bearings and parts in landing wheel; places wheel on axle and tightens retaining nut using heavy hand wrench; inspects pre-installed hand retraction assembly for proper alinement and freedom of moving parts; assists in testing landing gear by observing landing gear assembly as it is raised and lowered by electric motor controls, attaching weights that correspond to air resistance encountered during actual flight to determine proper functioning. May make minor adjustments of landing gear assembly.

LAPPING-MACHINE OPERATOR 6-78.413. Grinds surfaces of adjacent, moving parts one against the other, or surfaces of finely finished parts with a plane, spherical, or cylindrical hone (lap) which is changed or changeable with abrasives, to obtain perfect bearing surfaces; places parts to be lapped in machine and adjusts machine to move them in relation one to another so as to simulate the motions they will have when the machine or device of which they are parts is operated; adjusts a nozzle to pour fine abrasive-laden liquid over the area of contact between the moving parts; starts machine; stops machine after a predetermined interval and removes lapped parts. May clean parts in a solvent, such as gasoline, using a cloth or a brush.

LATHE HAND, AUTOMATIC; turning-lathe operator, automatic; turning-machine operator (furn.) 6-33.373. Sets up and operates a machine to turn such parts as chair and table legs from wood stock; installs cutters of appropriate size and shape, using hand tools; starts machine; places center of one end of stock against headstock-spun-center and operates lever to force tailstock center against piece and clamp it in lathe carriage; pushes on lever to start piece of stock rotating and to force it against rotating cutters, pressing pieces against cutters until carriage strikes stop; releases lever to swing piece from cutters; measures first piece cut with calipers and rule to check it against drawing; adjusts position of cutters to correct faults.

LATHE OPERATOR, AUTOMATIC I (auto. mfg.) 6-78.164. Operates one to four automatic lathes which perform in sequence a series of operations on parts, such as pistons, camshafts, and other precisely machined parts: lifts parts into machine and clamps them in place, alined with cutting tools; starts machine which automatically performs a series of operations, such as facing, chamfering, rough cutting, and finish cutting; loads one machine while others are operating; removes finished pieces, inspecting them visually and by gage. Observes operation of machines closely to locate tool defects or failures, and changes defective tools. May set up machine, ref. JOB SETTER.

LAY-OUT MAN 4-33.912. Marks on stock lumber the outline of frames, furniture parts, and other wooden sections, to which the machine operator works when processing the parts: (1) studies drawing of part or full assembly to be made; selects stock lumber of necessary size and measures and marks, with rule, square, and pencil or crayon, outlines of cuts to be made by various machine operators; (2) lays cardboard or wooden pattern on stock and draws around edges of pattern with pencil to mark outline of part. May write job tickets for machine operators. May make preliminary cuts with swinging-cut-off saw.

LAY-OUT MAN 4-75.140. Marks guide lines and reference points on metal parts or castings to indicate material to be removed in machining; plates or coats metal surfaces with chalk or paint; scratches lines and points on metal surface with scriber and center punch, using gages, rulers, dividers, and straightedge to locate the positions for the marks; indents location of reference points, such as center points, using a center punch and hammer. May be specifically designated according to type of work, as DIE LAY-OUT MAN: MACHINE LAY-OUT MAN.

LAY-OUT MAN 4-80.022**. Plans sequences of work to be followed and determines number of shearing operations required to fabricate airplane sheet-metal parts; calculates from work order the most appropriate size material to be used; determines the kind and number of cuts to be made by arranging a template in various positions on a lay-out table and referring to a shearing operations chart; calculates the number of pieces to be sheared from a standard metal sheet; notes on work order the size and number of metal sheets to be used, the kinds of cuts to be made, and the power shear to be used.

LAY-UP MAN I stock-set-up man, upholstery. A LABORER, PROCESS. Assists CUTTER, MACHINE I in piling together layers of cloth for cutting.

LEAD MOLDER 6-81.090*. Makes lead, male dies used in drop hammers; clamps asbestos-covered boards around female die to form a mold and seals the corners with wedges and clay; shapes the mold to correct contours with sand, using a trowel; fashions inserts by arranging bolts in a frame at mold; disassembles mold to remove the die.

LEAD-PLATE MAN; molder, lead punch; punch maker (aircraft mfg.) Molds male dies (punches) for use in stamping airplane parts from sheet metal: positions die carefully on floor of foundry so it is level, using an electrically-powered hoist, ref. ELECTRIC-MONORAIL-CRANE OPERATOR; places metal and plywood strips alongside of die and projecting into the air to form a box; pours a molten alloy (lead and zinc) into the box from a furnace mounted on an axle so the metal is easily poured; places a metal jig, into which bolts are inserted, on top of mold so that threaded bolt holes will be formed in the punch; removes cooled punch by unscrewing bolts with wrenches, breaking off strips and raising punch from die with hoist.

LETTERER I 5-27.910. A PAINTER, SIGN who paints initials, monograms, company names, or other lettering on passenger cars or commercial bodies by hand or brushes.

LIAISON PLANNER (aircraft mfg.) Investigates and solves airplane fabrication difficulties caused by faulty production planning: re-routes improper channeling of materials and parts in shop departments; communicates with supply rooms to assure a sufficient flow of parts, jigs, and fixtures; recommends changes in steps of fabrication to PRODUCTION PLANNER, guided by his knowledge of engineering, tooling, and fabrication methods to achieve maximum economies; interprets procedures of production-planning, and process and finish specifications to department heads.

LIBBY-LATHE OPERATOR 4-78.021. Shapes external and internal cylindrical surfaces of metal objects, such as castings or forgings, which are best machined when held in a chuck. The machine is semi-automatic, being equipped with a turret that can be set up to present each of the tools required for a cycle of machining operations to the work in tools sequence. May be specifically designated according to make of lathe (m) such as JONES-AND-LAMSON-LATHE OPERATOR; LIBBY-LATHE OPERATOR.

LIBERT-SHEAR OPERATOR 6-88.668**. Cuts straight and curved lines in aircraft sheet-metal blanks, using a cutting machine known by the trade name Libert shear: positions one or more blanks between the reciprocating upper and lower blades to cut along lines previously laid out in the metal by other workers; engages the cutting blades in the metal by depressing a foot pedal, moving the metal between the blades as necessary if a curved cut is required.

LINE FEEDER 9-65.47. Supplies material and parts to stations along assembly lines, carrying material by hand, or unloading buggies towed by tractors to the station; may load or unload conveyors that carry parts up to the station.

LOFTSMAN II 5-17.245**. Lays out to scale on plywood or sheet metal the lines of an airplane and its component elements preparatory to the making of blueprints and tools: makes preliminary lay-outs in reduced scale of exterior surface contours from engineering data and sketches, using draftsmen's tools, such as straightedges, triangles, and calipers, and employing his knowledge of descriptive geometry and trigonometry and his familiarity with airplane design; similarly lays out full-scale drawings of airplane structural units, such as fuselages and wings, working from engineering designs and loftings in reduced scale; prepares tables of full-scale off-sets of lofted airplane structures for shop use.

LUG-MILLING-MACHINE OPERATOR (aircraft mfg.) A MILLING-MACHINE OPERATOR II who mills, drills, reams, and faces lugs on motor mounts.

LUGGER (aircraft mfg.) Attaches lugs and numbers to wire by removing insulation from wire, correct size lug on wire; fastens spaghetti and wire number on lug with cellophane tape or where lugs are not installed, taping number on wire. This may be a task of DETAIL ELECTRICAL ASSEMBLER.

LUMBER HANDLER 9-63.76. A LABORER. Performs any of the following duties in connection with the moving and stacking of lumber: loading kiln cars with lumber, unloading lumber from elevator, or from kiln car, stacking seasoned lumber in yard, or laying it in racks, stacking unseasoned lumber in lumber yard, operating a mechanical lumber stacker, stacking bundles of lathe or barrel staves in yard; preparing temporary foundations for lumber stacks, covering stacks of lumber to protect the lumber from rain, unpiling limber from stacks, placing lumber on conveyors, and transporting lumber around plant or yard, piles lumber, working on the top of a lumber stack.

LUMBER INSPECTOR I 4-29.510. A GRADER VIII who examines each piece of lumber as it comes from freight car, grades it for quality estimates the amount of finished lumber it will yield after defects are cut out, and prepares written report on contents of each car.

MACHINE-SET-UP MAN IV 5-83.311. Mounts cutting tools in machines and adjusts machines to produce a product as specified on blueprints, or like a sample of the required product, preparing machines for operation by the machine operator: selects knives that most nearly conform to required shape; reshapes knives, when necessary, by grinding; mounts knives in cutter head, locating them in accordance with blueprints or sample; mounts cutter head in machine; operates the machine to produce a specimen of finished product; checks the specimen with sample or blueprint; makes necessary readjustments to positions of knives in cutter head or to the machine set-up. May sharpen knives

MACHINE-SHOP-LOAD ESTIMATOR; machine-load-control planner; machine planner. (aircraft mfg.). Estimates production capacity of machine shop equipment: studies previously established experience rating records and using his knowledge of machine capacities, operations necessary for manufacturing various parts, working properties of aircraft metals, and machine shop methods., determines production factors, such as need for additional machinery, possibility of accepting orders from other firms, or contracting with outside firms for the manufacture of specific parts; prepares written reports of findings.

MACHINED-PARTS INSPECTOR 4-78.671**. An INSPECTOR (mach. shop) who inspects machined aircraft parts, using standard measuring devices; tests hardness of parts.

MACHINERY AND TOOL DESIGNER 0-19.01. A MECHANICAL ENGINEER. Designs new machines, such as engine-lathes, pulleys, conveyors, cranes, and single purpose metal-working machines, machine attachments, or tools, applying the principles of mechanics, machine design, and kinematics, performing such drafting duties as may be necessary.

MACHINIST II. 4-75.010. Carries through to the completion the construction and repair of all kinds of metal parts, tools, and machines; understands blueprints and written specifications; uses skillfully all machinist's hand tools including scrapers, chisels, files, and measuring instruments; operates all machine tools including lathes, milling machines, planers, and specialized machines that have been developed from them. Possesses knowledge of shop mathematics, the use of charts and tables, the efficient planning of shop work, the dimensions and uses of standard bolts, screws, threads, and tapers; must be familiar with the working properties of such metals as aluminum, brass, cast and wrought iron, and various steels, and should be capable of shaping metal parts to precise dimensions within the close tolerances prescribed.

MACHINIST APPRENTICE 7-94.100. Although often loosely used, this title is intended to mean a worker not less than 16 years of age engaged under direct journeyman supervision, and according to a prescribed or traditional series of work processes graded to coincide with increasing trade maturity in learning a skilled occupation that requires, during the learning process, several years of reasonably continous employment prior to the time that the worker may be considered a qualified journeyman. In general, apprenticeship is legally recognized only if recorded in a written contract indenture, or agreement, in which, in return for services rendered, the employer promises to teach the worker the processes of his trade. The terms of an apprenticeship agreement usually include specific reference to the duration of the apprenticeship period, a progressive scale of wages, and the nature of the processes to be taught. Frequently the agreement also specifies the amount and nature of related schooling in vocational subjects in which the worker shall engage during his apprenticeship period. Typical classifications for apprentices are: COOK APPRENTICE; MACHINIST APPRENTICE; And PLUMBER APPRENTICE.

MACHINIST, BENCH 4-75.120. Performs various duties involved in fitting and assembling machines, equipment, and sub-assemblies, using hand tools and machine tools, such as scrapers, drill presses (m), and arbor presses (m); assembles and fits parts together, using materials such as chalk or Prussian blue to show high spots and chisels, files, and scrapers to smooth and fit the parts, lays out position of holes to be drilled during course of assembling and drills the holes on a drill press, reams holes to accurate size, or broaches them to size, fits or matches the various parts together and fastens them with screws, bolts or rivets.

MACHINIST, FLOOR 4-75.010. A MACHINIST who works on a large machinery and equipment on the shop floor.

MACHINIST HELPER 8-78.10. A LABORER, PROCESS. A worker who assists another worker by performing specific or general duties, usually of lesser skill, such as keeping a worker supplied with materials, tools, and supplies; cleaning working area, machine and equipment; performing routine machine operations, such as feeding or unloading machines; and assisting worker by holding materials or tools. May be expected to learn the occupation or trade of the worker he assists. Classifications are made according to the type of work involved. Typical classifications for helpers of this type are DYE-CLEANER HELPER (clean., dye., & press.) MACHINIST HELPER (mach. shop).

MACHINIST, MAINTENANCE 4-75.010. A MACHINIST II (mach. shop) who uses various machine and hand tools to produce replacement parts and new parts for mechanical equipment operated in an industrial establishment.

MAGNAFLUX INSPECTOR 4-78.674**. Inspects welded, forged, and machined steel airplane parts which have been set up by MAGNAFLUX OPERATORS, using magnetic inspection equipment known by the trade name Magnaflux; examines parts covered with iron filings or a solution of kerosene and iron oxide, using an electric light to facilitate inspection; tests defective welds by feeling the surface to determine whether the flaw can be removed by grinding; rejects faulty parts, indicating the flaws and defects on the parts with colored markings, and making out a rejection tag. May grind or file surfaces of parts to remove superficial defects.

MAGNAFLUX OPERATOR 6-78.674**. A MAGNETIC INSPECTOR who inspects steel airplane parts for defects, using equipment known by the trade name Magnaflux.

MAGNETIC-INSPECTOR 6-78.674*. Operates a magnetic-testing machine to detect fractures and surface defects and to determine the soundness of metal parts, such as camshafts, piston pins, nuts, and bolts; (1) immerges parts in dipping chamber of machine that contains an iron acice suspension: closes switch to send electric current through dipping chamber and deposit the iron particles on the parts at defective and fractured points (Steelscope method):

(2) positions parts in chamber of machine so that they contact the electrodes; sprays an iron dust suspension over the parts, rotating the parts to insure distribution of iron dust over surfaces of parts; closes switch to send current through the parts to magnetize them so that the parts attract and build up iron particles at defective points (Magnaflux method). Removes parts from machine and examines them for defects indicated by thicker deposits of iron particles, rejecting those parts that do not meet specifications. May be specifically designated according to method used.

MAINTENANCE MAN, FACTORY OR MILL 5-83.621. A classification title for workers who keep the machines, mechanical equipment, and the physical structures of an establishment in good repair and working order, performing a wide variety of maintenance duties. Is moderately skilled in the use of the tools of several trades rather than specializing in one trade or one type of maintenance work. Worker should be classified as a MAINTENANCE MAN, BUILDING if his duties are confined to maintenance of the building structure only, exclusive of machines and mechanical equipment.

MAINTENANCE MECHANIC II 5-83.641. A classification title for workers who keep machinery and mechanical equipment of an establishment in a state of good repair: examines mechines for defects in operation, locating faulty part by listening to machine while it is in operation or by other methods based on his mechanical knowledge; dismantles or partially dismantles machine to gain access to defective part and removes part, using various hand tools such as wrenches, screw drivers and pliers; repairs part, using hand tools, or obtains replacement part from stock; reassembles machine, making necessary adjustments to insure efficient operation; affixes special attachments, sets dies, oils and greases machinery, repairs belts, and performs other similar duties as necessary; moves heavy machine parts with aid of hoists and rollers. Is usually required to have a knowledge of the operation of machines he repairs. In general, works with lighter machinery than MILLWRIGHT, and is primarily concerned with keeping machinery in good repair rather than with changing lay-out and setting up or installing machines. If worker performs other types of maintenance work, such as repairing plumbing, brick work, or electrical fixtures, he should be classified as a MAINTENANCE MAN, FACTORY OR MILL.

MAINTENANCE MECHANIC HELPER, A LABORER. Performs duties as described under HELPER III.

MAJOR ASSEMBLER (aircraft mfg.) 5-03.552. A classification title for jobs involving the assembly of major airplane units, such as wings, fuselages and tails. Classified under this title are the following jobs: ASSEMBLY MAN VIII; CENTER-SECTION ASSEMBLYMAN; FUSELAGE ASSEMBLYMAN; GENERAL AIRCRAFT ASSEMBLER II; SKIN MAN; WING ASSEMBLYMAN.

MAJOR-ASSEMBLY INSTALLER 5-03.572**. A classification title for jobs involving the joining of major units to form the completed airplane. Classified under this title are the following jobs: CLEAN-UP MAN VIII; ENGINE-INSTALLATION ASSEMBLER; ENGINE PREPARER; FINAL ASSEMBLER I; FUEL-SYSTEM INSTALLER; HYDRAULIC-SYSTEM CHECKER; RIGGER IX; DISASSEMBLER.

MANAGER, EMPLOYMENT 0-39.82. Interviews applicants and hires or refers those possessing satisfactory qualifications, to departmental managers for hiring; maintains harmony among establishment personnel by the adjustment of disputes and grievances, review of transfers, promotions, and discharges; conducts research in wages, house, and working conditions.

MANAGER, INDUSTRIAL ORGANIZATION 0-97.41. Is responsible for the efficient management of an industrial corporation: coordinates the operation of production, distribution, and selling departments; determines administrative policies, and executes them through subordinate managers.

MANAGER, OFFICE I 0-97.12. Supervises and directs clerical employees in the business office of an establishment; hires and discharges subordinates; assigns duties; coordinates the work of the office with other departments; performs other supervisory duties. May actively engage in one or more clerical duties, such as keeping books or making up pay roll.

MANAGER, PERSONNEL 0-39.83. Formulates policies relating to the selection, training, promotion, welfare, compensation, recreation, and discharge of employees, and other employer-employees relationships, supervising subordinates engaged in executing the policies or performing these duties himself; directs the hiring of employees; the training of the employees; welfare activities, and recreational activities. The scope of personnel work and the duties and responsibilitites vary widely in different establishments, depending upon the policies of the management.

MANAGER, PRODUCTION I 0-97.51. Supervises directly or through subordinate foreman all production departments of an establishment, coordinating the work of the various departments, regulating production, overseeing the hiring, discharging, transferring, and promoting of employees or performing these duties himself, and performing other administrative and supervisory duties to insure efficient and profitable operation. May personally conduct or supervise the conducting of a particular process.

MANAGER, TRAFFIC 0-97.66. Oversees the shipping and receiving of merchandise by an industrial or commercial firm: plans most economical and quickest routes for shipping merchandise from or to the establishment; makes inquiries into delays, damages, or irregularities in shipping; makes adjustments with transportation company for damages to merchandise in transit. May design or select shipping containers best suited to the needs of the individual establishment. May supervise SHIPPING CLERK (clerical) and other shipping room employees.

MASKER 9-03.01**. A LABORER, PROCESS. Covers parts with paper (masking) to protect them when surrounding areas are being spray painted; cuts paper and light cardboard to proper size; secures masking in place with gummed tape.

MASTER MECHANIC, MAINTENANCE 5-83.621. Supervises and assists CARPENTERS, MAINTENANCE; MACHINISTS, MAINTENANCE; MAINTENANCE MECHANICS: MILLWRIGHTS; and other workers engaged in the installation and repair of equipment and the maintenance of plant structure of a large commercial or industrial establishment. May advise and assist department foreman and PLANT ENGINEER in devising and improving production and maintenance methods.

MATERIAL CUTTER (aircraft mfg.) A POWER-SHEAR OPERATOR I who cuts out blanks to be fabricated into sheet metal airplane parts.

MATERIAL-RELEASE MAN; material man; (aircraft mfg.) Lays out templates for shearing work: cuts a paper pattern for template, working from blueprints; verifies pattern with template or finished part; routes paper pattern for duplication in sheet metal; ties metal template on sheet metal stock to secure greatest possible number from one sheet; writes shearing instructions on shop order.

MATERIAL-TEST CLERK (aircraft mfg.). A LABORER. A DISTRIBUTOR I who distributes materials to workers performing various tests, such as hardness tests; stamps tested material with appropriate designations, ref. STAMPER I (any ind.).

MATERIAL WEIGHER 1-45.01**. A WEIGHER II(clerical) who weighs partially processed sheet-metal airplane parts and records weight on provided forms: loads scale with sheet-metal parts; adjusts weight on scale beam to secure a balance and notes weight of material.

MATERIAL WRAPPER 9-65.43**. A LABORER Wraps or bags sheet-metal airplane parts to protect the metal against scratching while in transit through the shop for further processings: places lots of small parts and templates in paper bags; stacks and wraps large parts and templates, separating individual pieces with sheets of wrapping paper, and ties lot with cord or wire; places work orders in envelopes to bags and packages; writes on packages the numbers of the departments to which the packages are to be delivered.

MECHANICAL ENGINEER 0-19.01. A classification title for persons meeting the educational, experience, or legal qualifications for the general field of mechanical engineering that are established by engineering colleges, or licensing authorities. Persons within this group usually specialize in one or more of the following branches of mechanical engineering: the design of tools, internal combustion or steam engines, machine or machine tools, and heating or industrial furnaces; the arrangement of industrial plants; the planning of factory distribution systems for industrial products and individual or central distribution systems for heat, gas, water, or steam; the supervision of industrial processes and labor utilization; and research in any of the above fields.

MECHANICAL ENGINEER, JUNIOR 0-19.02. Prepares specifications for machinery and tools under the direction of a MECHANICAL ENGINEER: determines and maintains as high efficiency on plant machines as is practicable; aids in general maintenance of plant machinery and equipment.

METAL-FITTINGS INSPECTOR 6-78.675**. Inspects metal airplane fittings, such as clips, brackets, and hinges: examines parts by sight and touch for defects in the metal; verifies size, shape, and contours of parts, using templates and check jigs; compares parts to specifications to ascertain that they are made of the prescribed metal and have the required finish. May use precision measuring instruments, such as calipers and micrometers.

METAL-STAMPING INSPECTOR 6-94.218. Inspects and checks finished metal stampings for irregularities, indentations, and rough edges.

METALLURGIST II 0-07.32. Analyzes ores and properties of metals, performing research, and directs or advises concerning industrial processing of ores and the treatment and alloying of metals; investigates melting of metals, their suitability for working, and resistance to corrosion; studies the mineral constituents and association of ore, for metal recovery; studies heat treatment of metals; compiles all data into necessary reports.

METALLURGIST III (aircraft mfg.) heat-treat specialist. A HEAT TREATER III (heat treat.) who specializes in heat-treating steel and steel-alloy parts in an airplane manufacturing plant.

MICROMETER INSPECTOR 7-00.222. Inspects the diameter of wire using a device (micrometer) that measures diameter accurately.

MILLING-MACHINE OPERATOR II 4-78.031. Performs shaping, planing, and grooving machine work on metal objects, using a machine that cuts the metal with many-toothed rotary cutters; fastens work on table of machine with bolts or in a vise or special holding fixture; selects appropriate milling cutters and clamps them in machine; moves levers to select appropriate speeds of table feed and cutter rotation; turns handwheels to bring work into position under cutter; starts machine; engages power feed, or turns handwheels to feed work to cutter; stops machine and verifies dimensions of work; removes completed work from machine. May set up a dividing head on table of machine and use dividing head to obtain accurate spacing between cuts, as when machining teeth on gears. May be specifically designated according to type of machine, as PLAIN-MILLING-MACHINE OPERATOR.

MILLING-MACHINE OPERATOR, AUTOMATIC 6-78.031. Operates one or more semi-automatic or fully automatic milling machines of various types (more then 50 different designs are in use) which cut away excess metal to make flat surfaces on parts, such as cylinder head and motor block castings; duties performed vary according to machines and equipment used, ranging between a manual control to fully automatic control excepting loading and unloading a conveyor which automatically carries the pieces through the milling machine.

MILLING-MACHINE OPERATOR, HAND 4-78.031. A MILLING-MACHINE OPERATOR II who does light, precise machine work with a milling machine on which the table is fed toward the cutter by turning handwheels or cranks instead of by power feed so that the operator can sense the progress of the cutter by the resistance felt through the handwheels.

MILLING-MACHINE OPERATOR, PORTABLE (mach. shop.). A MILLING-MACHINE OPERATOR II who sets up and runs a milling machine so designed that it can be attached to structures under construction to finish portions not readily accommodated on a conventional milling machine because of their size or their attachment to large, fixed, or heavy objects: positions, levels, and bolts down tracks along which milling head runs; selects and installs appropriate milling cutter; turns traversing wheels to position milling cutter and adjusts depth of cut; adjusts driving mechanism to feed milling head along tracks at appropriate speed, and to rotate cutter at a speed co-ordinated with the feed; turns on machine and observes its operation; checks the work frequently with such measuring devices as scales, calipers, and gages, and adjusts machine as necessary to obtain necessary precision.

MILLMAN 4-33.914. Fabricates various lumber products, such as sashes, window and door frames, doors, dressed lumber, and furniture parts, using hand tools and woodworking machines, usually including molders, planers, shapers and hand or powered saws. This job usually occurs in small plants where separate operators for the various machines and operations are not employed.

MILLMAN APPRENTICE 7-99.820. Essentially same as APPRENTICE I except that duties are not performed under organized instruction nor under contractual relationship, the progress of the worker toward mastery of the trade depending upon his own initiative and the cooperation of the worker whom he aids. Although this definition is frequently used by both workers and employers, it is not officially recognized by such organizations as the Federal Committee on Apprenticeship and similar State agencies unless there exists the formal worker-employer relationships described under APPRENTICE I.

MILLMAN HELPER II 8-33.11. A worker who assists another worker by performing specific or general duties, usually of lesser skill, such as keeping a worker supplied with materials, tools, and supplies; cleaning working area, machine and equipment; performing routine machine operations, such as feeding or unloading machine; and assisting worker by holding materials or tools. May be expected to learn the occupation or trade of the worker he assists. Classifications are made according to the type of work involved. Typical classifications for helpers of this type are DRY-CLEANER HELPER (clean., dye., & press.); MACHINIST HELPER (mach. shop).

MILLWRIGHT 5-78.100. Changes the lay-out and set-up of machines and mechanical equipment in a plant or mill wherein the machinery is usually of the heavy type, and keeps the machines and equipment in efficient operating condition; performs duties, such as dismantling, moving, installing, or repairing machines, power shafting, pulleys, conveyors, hoist, and other equipment; uses hoists, dollies, rollers and trucks to aid in moving machinery; uses wrenches, hammers and other hand tools in erecting or dismantling machines and in installing new or repair parts; uses measuring devices, such as squares, micrometers, calipers, and plumb bobs in erecting machine foundations, in installing the machines and equipment in correct position, and in alining power shafting and pulleys. Is primarily concerned with installing, changing lay-out, and setting up machines, usually of the heavy type, rather than with keeping them in a state of good repair.

MILLWRIGHT HELPER 9-65.43*. A LABORER. Performs duties as described under HELPER III. (Part I).

MISCELLANEOUS-EQUIPMENT TESTER (aircraft mfg.) A FINAL-ASSEMBLY INSPECTOR who tests installed airplane fuel and heating system for leaks by attaching hose from air line to supply air under pressure and observing gages; tests brake expander tubes for leaks by forcing a special oil through the tubes to a specified pressure, using hand pump; checks gages to determine leaks.

MOCK-UP ASSEMBLER 5-17.240*. Constructs and assembles the full-sized, wooden replicas of airplanes from which are made the sectional jigs used in production assembly: working from blueprints, prepares the basic "mock-up" frame from planks and timbers using various woodworking tools, such as the circular saw, lathe planer and disk sander, and bolts the frame together; completed "mock-up" by fashioning parts, such as the frame ribs and longitudinal contour strips according to lay-outs and fastens them in place with bolts, screws, or clamps.

MODEL MAKER IV 0-44.71. Constructs models to a desired size, using clay, plaster, plaster of paris, or other substance depending on the various industries for which the model is constructed, such as ship and boat building, or automobile manufacturing.

MODEL MAKER V 5-17.120*. Constructs aircraft models and parts to scale according to blueprint specifications for wind tunnel testing and exhibition: shapes parts from soft wood, veneers, fabric, and other materials using carving knives, lathes, drills, chisels, and sanders; assembles parts to complete airplane model using glue, nails, and wire; works to close tolerances using precision measuring instruments, such as micrometers and weight scales.

MOLDER APPRENTICE 7-97.050*. Performs duties as described under Apprentice I.

MOLDER BENCH I 4-81.010. Makes molds on a bench by hand by packing and ramming green sand, dry sand, or loam around patterns which have been placed in suitable flasks; uses riddles, shovels, trowels,slicks, lifters, bellows, and mallets, in the handling, compacting, and smoothing of sand.

MOLDER, FLOOR 4-81.030. Makes molds for bulky castings on foundry floor by packing and ramming green sand, dry sand, or loam around patterns which have been placed in suitable flasks; uses riddle, shovel, rammer, trowel, slick, lifter, bellows and mallet in handling, compacting, and smoothing sand; directs ELECTRIC-BRIDGE-CRANE (any ind.) in lifting, turning over, and shifting heavy flasks, molds, and patterns. May make symmetrical molds or sections of molds by the sweep method.

MOLDER HELPER III 6-82.950. Assist MOLDERS, BENCH and MOLDERS, FLOOR in making molds: transports sand to work bench or molding floor with wheelbarrow; moistens sand with water from pail or hose; mixes sand by turning over with shovel; carries flasks, follow boards, cores and other equipment to the work place: shovels sand into flasks; compacts sand with ramming tool; helps to lift, turn, and transport molds, with or without aid of hoist or crane; keeps the workplace clean. May pour molten metal into molds; may break molds away from castings.

MOLDER OPERATOR III 6-33.464. Sets up, maintains, and operates a machine that planes wooden boards or strips on all sides and shapes them to required cross sections; determines from blueprints or orders, shape to be cut; selects suitable cutter heads and fastens them on spindles with wrench; selects knives and bolts them in place in the cutter head; adjusting them to template or sample piece; sets guide to hold stock in position; starts machine and makes trial cut; checks trial piece and readjusts machine; shoves pieces between feed rolls that automatically carry pieces through machine, whets knives with oilstone. May grind knives to correct profile.

MOTORCYCLE DRIVER, DELIVERY 7-35.200. Drives a motorcycle, usually equipped with a side car or other carrying compartment, for the speedy delivery or picking up of small orders of light merchandise, advertising circulars, and other items; usually has customer sign receipt upon delivery of article. May make minor mechanical repairs to motorcycle and perform additional duties such as wrapping articles for delivery.

MOTOR-MOUNT MECHANIC (aircraft mfg.) A SUBASSEMBLER III. A FITTING MAN who assembles airplane motor mounts in a jig prior to welding.

MULTIPLE-SPINDLE-DRILL-PRESS OPERATOR 6-78.081. Performs such operations as drilling, reaming, and sometimes tapping on metal objects with a drill press equipped to rotate and feed several drills simultaneously.

NACELLE ASSEMBLYMAN; nacelle man (aircraft mfg.). A SUBASSEMBLY INSTALLER I. Fits on uninstalled wing nacelles various firewall, engine control, and retractable landing gear brackets and supports, locating brackets in proper position by use of jigs, measurement instruments, such as scales and squares, or guided by jig pilot holes; drills and reams bolt and rivet holes, using an electric hand drill and permanently bolts brackets or fastens them with machine bolts for riveting; fits and trims skin on surface, ref. SKIN MAN. May be specifically designated according to degree of proficiency acquired as nacelle assemblyman, class a; nacelle assemblyman, class b; nacelle assemblyman, class c.

NACELLE INSTALLER (aircraft mfg.) A SUBASSEMBLY INSTALLER I. Installs nacelle (g) on airplane wing: places nacelle assembly in a jig and adjusts jig screws to raise assembly until it is in proper alinement with wing structure; determines amount of trim necessary to obtain accurate fit by measuring with machinist's rule and marking with dividers; lowers jig, cuts and trims nacelle with hacksaw, snips, and files, and returns it to installation position to complete fitting and dressing of parts; attaches nacelle to wing structure by clamping it in position, drilling and reaming bolt and rivet holes, inserting and tightening bolts or fastening assembly with machine bolts prior to riveting; installs fairing over surface, ref. FAIRING INSTALLER. May be specifically designated according to degree of proficiency acquired, as nacelle installer, class a; nacelle installer, class b; nacelle installer, class c.

NAILING-MACHINE OPERATOR I 6-33.918. Sets up and operates a machine that drives nails into boards: spaces nail chucks according to desired spacing of nails; loosens hand screws and moves chuck rails, adjusting chucks to drive nails in straight or staggered rows; raises or lowers table according to size of pieces to be nailed; fills hopper above each chuck with nails; starts machine; places boards to be nailed under nail chucks and steps on pedal, causing nails to be driven into boards; releases pressure on pedal and removes nailed pieces.

NIBBLING-MACHINE OPERATOR 6-94.270**. Cuts metal tubing and sheet metal according to specifications, using a nibbling machine: bolts a mandrel, corresponding to inside diameter of tubing, to the bed of the machine so that the hole in the mandrel is beneath the reciprocating cutting die; inserts tubing into nibbling template, fastening it with screws, or clamps templates to sheet-metal in accordance with markings; adjusts cutting stroke of reciprocating die according to thickness of metal and template by manipulating a hand wheel; slips tubing over mandrel or holds sheet -metal against cutting die and depresses pedal to start machine; guides work beneath the reciprocating cutting die until desired amount of metal has been removed and work conforms to shape of template. May file and grind excess metal and rough edges of nibbled parts to specified dimensions.

NORMALIZER 4-87.010. Tends an annealing furnace in which metal parts are subjected to heat treatment to relieve internal strains, and to soften and strengthen the metal: packs parts with sand in iron pots or boxes and seals them with clay to prevent uneven heating of parts; loads pots or boxes on a railcar and pushes it into furnace, or on a conveyor truck that carries them into furnace; lights oil, gas, or pulverized coal burners and regulates fuel and air supply to control heat in furnace so that temperature is raised gradually to desired point at which it is held for proper length of time; allows furnace to cool slowly and unloads or supervises unloading metal parts; may heat metal parts to predetermined temperature and quench them in oil or water or harden them.

NUMBER STAMPER 9-03.01. A LABORER, PROCESS. Stamps names or identification numbers on metal parts and cutting tools, using a hammer and a series of chisel-like tools, each of which presses a number or letter into the surface against which it is driven by a hammer blow. May be specifically designated, as metal stamper, or TOOL STAMPER.

OFF-SET-PRESS OPERATOR; gear-press operator (aircraft mfg.) A FORMING-PRESS OPERATOR II who forms sheet metal airplane parts in a press equipped with a set of dies used for forming, braking and off-setting (indenting and bending).

OIL EXTRACTOR 9-65.64. A LABORER. Reclaims oil that has been used to lubricate cutting tools; shovels oily chips into a chamber of a centrifugal machine; starts machine and allows it to run for a prescribed length of time; stops machine and dumps out chips from which oil has been reclaimed; drains recovered oil for re-use.

OILER I 9-71.01. Lubricates in routine manner, with oil or grease, the moving parts or wearing surfaces of mechanical equipment, such as shaft and motor bearings, sprockets, drive chains, gears, and pulleys, working in engine room or throughout the plant: fills oil can, grease gun, or other contâiner with lubricant; squirts or pours oil on moving parts or into holes, oil cups, or reservoirs, adjusts feed of oil from cups or reservoirs so that proper amount reaches moving parts; forces grease into bearing with grease gun, or packs grease cups by hand and screws down cap to force grease to moving parts; pours oil or smears grease on friction surfaces, such as driving chains and guides; keeps pumps or wells for lubricating systems filled with oil, cleans machines and equipment. Sometimes specifically according to machines oiled and greased, as CIGAR-MACHINE OILER (tobacco); LOOM OILER (textile); TIPPLE OILER (bit. coal mining).

OILER II 7-71.010. Lubricates mechanical equipment in same manner as OILER I; usually selects proper lubricants and performs additional duties that vary considerably in different plants, such as firing boilers in engine room or boiler house, assisting STATIONARY ENGINEER or other superior to repair and overhaul machines and motors, and operating, or relieving superiors in operation of motors, engines, and machines.

OILER AND GREASER 8-87.10**. A LABORER, PROCESS. Coats the interior and exterior surfaces of steel airplane parts with grease and oil to prevent corrosion: plugs all holes but those at either end of tubular parts with wooden plugs; squirts oil under pressure into one hole until the interiors are filled and the oil flows out of hole at the other end; removes plugs to allow oil to escape and blows out excess oil with an air hose; places parts on oil pans for additional drainage, periodically agitating them; fits spray nozzle into oil gun and sprays exteriors of parts with oil; spreads grease on specified parts by hand; wipes excess lubrication from parts with cloth and solvent.

OKITE CLEANER 9-03.01. A LABORER, PROCESS. Prepares metal parts for enameling by dipping them in a special solution that removes grease and dirt.

OLEO ASSEMBLER 7-03.542**. A DETAIL ASSEMBLER I. Bolts hydraulic shock absorber assembly to landing gear legs; examines holes in parts, reaming them out to secure an exact fit for the bolts; inserts bolts and secures them with nuts and cotter pins so there is no play; cleans parts in a series of pickling baths.

OPEN-SIDE-PLANER OPERATOR (mach. shop). A PLANER OPERATOR II who operates a machine in which the cross rail is supported by one instead of two uprights, leaving one side of the planer table clear so that large or irregularly shaped objects that overhand the table can be machined.

ORDER DETAILER 1-18.64. Based on customer's purchase order, prepares a detailed standard work sheet to be used in the plant or factory as a guide in the assembly or manufacture of products ordered: lists data such as quantity, quality, type, size, rate of proposed production, and time specified for completion of the products to be made; checks the bill of materials and orders parts or materials; obtains from files descriptive material, details, blueprints, and tracings pertaining to the products to be made and attaches them to the order sheet. May keep an inventory of the stock on hand and a record of the production. May use a calculating machine.

ORDER FILLER 9-65.43. A LABORER. Fills customer orders in a retail, wholesale, or manufacturing establishment: selects items of merchandise listed on individual customer orders from stock shelves or bins, groups them together according to order, and carries or transports them on a hand truck to shipping room or delivery platform.

OUTBOARD-WING ASSEMBLER (aircraft mfg.) A SUBASSEMBLY INSTALLER I. Installs preassembled parts, such as wing tips, de-icer boots, and ailerons on outboard sections of airplane wings: positions ailerons on wing, secures it by bolting hinges, and regulates its range of movement to specified degrees as indicated by a protractor by adjusting turnbuckle attached to control arm; trims skin, previously fitted by SKIN INSTALLER, using a router (m), *ref.* ROUTER OPERATOR, PORTABLE; prepares wing assembly for connection with inboard wing section by hammering overlapping skin on jig to obtain correct contour and by gluing a rubber strip between skin and top of rib; installs access door by countersinking holes around opening, positioning door, fastening with screws, and connecting activating pulley assembly. Workers may be designated according to degree of proficiency attained, as outboard wing assembler, class a; outboard wing assembler, class b; outboard wing assembler, class c.

OVERSTOCK CLERK (aircraft mfg.) A STOCK CLERK II (clerical) who stores and keeps records on special forms of surplus airplane parts left over after the completion of shop orders, making up shortages on other orders by corresponding withdrawals.

OXYGEN-SYSTEM TESTER (aircraft mfg.) Tests operation of airplane oxygen systems for leaks: fills oxygen system with air and maintains it at a specified pressure for a definite period of time; inspects lines and connections to which a soap solution has been applied by other workers and observes pressure gages to detect leaks in the oxygen system; stamps inspection charts with rubber stamps to indicate condition of systems.

PACKER II 9-65.43. Packs finished and wrapped products of an establishment in cardboard or wooden boxes, cartons, kegs, or other containers preparatory to shipment or storage: neatly folds, stacks, or otherwise arranges the articles in the container, using excelsior, wastepaper, or other material as necessary to prevent breakage or damage. May, while packing, weigh articles and inspect them for size, color, defects, or otherwise arranges the articles in the container, using excelsior, wastepaper, or other material as necessary to prevent breakage or damage. May, while packing, weigh articles and inspect them for size, color, defects, or other items and keep a record of articles packed. May be specifically designated according to article packed, as can packer, oyster packer, glassware packer, or according to type of container packed, as BOX PACKER ; CRATE PACKER.

PAINT BOY 7-89.363. Assists painters, performing duties, such as mixing paints, cleaning used paint brushes in alcohol, turpentine, or other solvent: straining paint through metal strainer to remove scum caused by oxidation, carrying supplies, and running errands.

PAINT-DOPE-AND-COVERING INSPECTOR 7-03.818. Inspects chemically processed and painted surfaces, and fabric covered parts: examines parts which have been etched or pickled to ascertain that the processing is satisfactory; verifies painted surfaces (insignias and camouflage) against blueprints, using flashlights and inspection mirrors; inspects fabric covered surfaces tactually and visually for proper stretching, stitching, and covering; prepares refection and rework tags for unsatisfactory details.

PAINT INSPECTOR III 5-16.932**. Inspects paint on metal or fabric airplane surfaces: examines painted surfaces by sight and touch for chipping, cracking, and powdering, using a flashlight; compares paint with specifications to ascertain that the required colors are used; verifies camouflage with camouflage templates, and inspects lettering for accuracy and quality.

PAINT-SPRAY INSPECTOR 7-02.744. Inspects body and parts after each painting operation for smoothness, completeness, and texture, by holding a strong light at different angles to reveal defects; marks defects with chalk.

PAINT STOCKMAN 1-38.01. A STOCK CLERK II who receives, stores, issues, and keeps appropriate records of paints used in the manufacturing and finishing of airplanes.

PAINT-TOUCH-UP MAN 7-16.550. Repairs damaged or defective areas of painted automobile bodies with a spray gun or with a small brush, depending on the extent and location of the damage; rubs damaged area with sandpaper; sprays paint over sandpapered area, touches up small spots with a hand brush; touches up defective striping with a brush or a mechanical striper.

PAINTER, DIP 7-16.930. A DIPPER II who dips machine shop products or parts in paint.

PAINTER HELPER 9-32.21. A worker who assists another worker by performing specific or general duties, usually of lesser skill, such as keeping a worker supplied with materials, tools, and supplies; cleaning working area, machine and equipment; performing routine machine operations, such as feeding or unloading machine; and assisting worker by holding materials or tools.

PAINTER HELPER II 9-16.85. Assists various painters engaged in painting aircraft, such as DOPER I and PAINTER, SPRAY I by performing the lesser skilled tasks; obtains necessary supplies from stockroom, such as paints, lacquers, dope, brushes, and tables; moves or assists in moving parts to be painted to and from work tables; sandpapers rough surfaces by hand or machine, preparatory to painting; applies masking tape, as directed, to prevent paint from getting onto certain areas. May apply paint by hand brush, or spray gun under direction of PAINTER, SPRAY I.

PAINTER HELPER, INSIGNIA 9-03.01. A LABORER, PROCESS. Assists PAINTER, INSIGNIA in applying paint and identifying designs to airplanes; tapes stencils in place on airplane fuselages and wings; covers areas which are not to be painted with paper, assists in applying designs to airplane wings and fuselages by removing outer paper covering from decalcomanias under supervision.

PAINTER HELPER, SPRAY 9-16.21*. Assists PAINTER, SPRAY I in painting surfaces; moves parts to spray painting room; prepares surfaces for spray painting, masking parts not to be painted with tape; sets ladders or scaffold in place and positions parts for painting; may spray prime coat; removes parts to drying room.

PAINTER, INSIGNIA 7-16.210*. A PAINTER, SPRAY I who sprays insignia, numerals, and other designs on airplanes, using stencils and special adhesive paper to block-out unpainted areas, positions stencils to produce designs, as called for by blueprint, using ruler and pencil; applies decalcomania transfers. May print insignia with brush.

PAINTER, MAINTENANCE 5-27.010. A PAINTER I who paints and redecorates walls, woodwork, and fixtures of an establishment, scraping paint from old surfaces, placing putty of filler in nail holes and interstices, mixing colors, oils, white lead, and other paint ingredients to obtain proper color or consistency, and applying paint with spray gun.

PAINTER, SIGN 5-27.910. Designs, lays out, and paints signs; mixes paints and pigments, by hand, to get desired colors; coats backgrounds with paint, using paint brushes; lays out letters and designs directly on sign or on paper; transfers design from paper to sign by perforating lines on paper with a roller perforator and transferring design to sign surface by pouncing with a bag or charcoal or powder; traces and fills in marked letters with various size brushes; paints over stencils cut from paper or thin sheet metal; when making signs with gold letters, sketches lettering on sign, varnishes surface, picks up gold leaf with soft hair brush, and rubs off excess gold leaf which overlaps letters; letters signs on windows by chalking design, and painting letters with brushes or laying gold leaf in place. May make signs, using tinner's or carpenter's tools.

PAINTER, SPRAY I 7-16.210. Coats surface of manufactured articles with finished materials, such as paint, lacquer, stain, or porcelain glaze, using a spray gun: stirs coating liquid with paddle and pours it into container which may or may not be attached directly to gun; couples gun to air hose; starts compressor or opens valve in compressed air lines; regulates pressure by turning valves; adjusts nozzle of gun by turning adjusting sleeve; presses trigger, causing liquid to be atomized and sprayed with gun, and directs spray on surface; cleans gun and hose lines with a solvent. May touch up inaccessible spots with a hand brush. May be specifically designated in various industries according to type of coating being used, such as ENAMEL SPRAYER; VARNISH SPRAYER; or according to articles being sprayed, such as BRAKE-DRUM SPRAYER; WHEEL SPRAYER II.

PANTOGRAPH OPERATOR II 6-85.240**. A PLANE-CUTTING-MACHINE OPERATOR who cuts a steel plate into various designs and shapes; hoists plate to be cut onto one table; draws on table top of adjacent table lay-out of design to be cut, or lays template or blueprint of lay-out on table top; measures plate and locates reference points; adjusts plate so that nozzle of acetylene torch coincides with reference points when tracing wheel or stylus on adjacent table coincides with corresponding reference points on the template or lay-out; lights torch and adjusts flow of gases by regulating valves on the oxygen and acetylene lines; traces around templates or lay-out with tracing wheel or stylus, each motion of tracing point being transferred through a system of levers and duplicated by the cutting torch.

PARTS FITTER II 4-75.120**. A MACHINIST, BENCH who drills and finishes fittings which are installed or are to be installed on airplane frameworks.

PARTS NUMBERER; parts-numbering boy (aircraft mfg.) A LABORER, PROCESS. Numbers airplane parts with rubber and metal stamps: adjusts rubber stamper to secure proper number; stamps numbers on inking pad and then on part; stamps numbers on parts with a metal stamp, ref. NUMBER STAMPER.

PARTS-NUMBERER-AND-REWORK MAN (aircraft mfg.). A LABORER, PROCESS. Removes assembled parts from jigs and labels them with identifying numbers, using rubber stamp and ink pad, ref. STAMPER I (any ind.), or attaches appropriately numbered tag; visually examines parts for errors and returns defective parts for correction; transfers approved parts to other workers for detailed inspection.

PARTS TRIMMER (aircraft mfg.) A POWER-SHEAR OPERATOR I who trims excess metal from partially or completely fabricated airplane parts. May also trim parts with a band saw.

PARTS WIRER 8-74.10. A LABORER, PROCESS. Wires, clips, or otherwise affixes to racks, metal objects to be electroplated, galvanized, or subjected to a similar process so that objects can be suspended in the plating, galvanizing, or other solution.

PATTERN-AND-FOUNDRY INSPECTOR I 5-17.257**. Inspects wood and plaster patterns and metal dies: examines patterns and dies, measuring dimensions with instruments, such as calipers, micrometers, and sight levels, comparing the measurements, with blueprint specifications; inspects patterns for shrinkage allowance, using a shrink scale which automatically compensates for shrinkage in the die metal; measures draft angle (angle required so that the pattern may be removed from the molding sand) to ascertain that it is within specified limits; inspects metal dies in use to detect wear and distortion.

PATTERN LAY-OUT MAN 5-17.030. Makes scale drawings of patterns and core boxes on a sheet of metal; compares dimensions on scale drawing with dimensions of finished pattern or core box; compares dimensions on scale drawing with dimensions of finished casting and orders such changes in pattern or core box as are necessary to produce a casting of correct dimensions; instructs and supervises the work of PATTERNMAKER.

PATTERNMAKER XI 5-17.248**. Builds patterns of plaster, clay, or other materials for use in making open sand molds from which dies and airplane parts are cast: determines from blueprint and work order the methods to be used in making the pattern and the number and kinds of templates needed: lays out templates on sheet metal stock and gives directions for the machining of the metal; assembles templates and cuts wooden frame parts to size, combining the two to form a framework (jig or modeling board) to receive the clay or plaster; tacks open mesh wire to the frame and spreads clay or plaster over the mesh, smoothing it to exact blueprint dimensions with hand tools to complete the mock-up; spreads a mixture of hemp and plaster thinly over the mock-up to form a splash cast; makes die patterns from the splash cast.

PATTERNMAKER APPRENTICE, WOOD 7-99.833*. Performs duties as described under APPRENTICE I.

PATTERNMAKER, PLASTER II 5-17.248**. A PATTERNMAKER XI who builds plaster patterns for use in making sand molds, in which such articles as zinc dies are cast.

PATTERNMAKER, WOOD 5-17.020. Builds wooden patterns, core boxes, and match plates according to dimensions shown on blueprints by gluing, nailing, screwing, sawing, planing, sanding, and painting, using hand tools such as saws, planes, chisels, gouges, and mallets, and shop machines, such as band saw, circular saw, borer, router, lathe, planer, drill press, sander, and shaper; checks results with calipers, rules, shrinkage rules, protractors, squares, straightedges, and other measuring instruments; may make sweeps (templates) for making molds by sweep-molding method.

PAYROLL CLERK I -26.02. Computes wages of company employees and writes the necessary corresponding data on the pay roll sheets: calculates each worker's earnings based on TIMEKEEPER'S report, individual time cards, and work or production tickets; posts calculated data on pay roll sheet, showing information such as worker's name, working days, time, rate, deductions for insurance and total wages due. May make out pay checks and assist the PAYMASTER in making up and distributing the pay envelopes. May use a calculating machine.

PERSONNEL CLERK 1-18.32. Keeps employment records of company personnel; enters on each worker's employment record data, such as change of address or telephone number, weekly earnings, amount of bonuses, days absent on vacation or because of sickness, efficiency, amount of sales or production, supervisor's report on ability, and data and cause of termination of employment; compiles and types composite reports from all the employment records covering any of the above items; sends out information to other companies requesting references of former employees. May operate a calculating machine. May keep records of group life insurance.

PHOTO-TEMPLATE MAKER (aircraft mfg.). Projects a photograph of a blueprint on photo-sensitized sheet metal, so that the templates can be fabricated directly from this lay-out.

PICKLING OPERATOR 8-74.10. Cleans grease, dirt, scale, and other foreign matter from metal objects preparatory to electroplating, galvanizing, or other processes; immerses the objects, held in a basket or by hooks, in a succession of acid and water baths, by hand or with the aid of a hoist; allows objects to remain in baths until thoroughly cleaned. May maintain acid concentration of baths by adding acid as necessary. May fasten hooks to cleaned objects or place them on racks to be immersed in plating solution.

PIN-ROUTER OPERATOR 6-94.227**. A ROUTER-OPERATOR III who operates a router equipped with a fine cutter called a pin.

PIPE-FITTER APPRENTICE 7-96.200. Performs duties as described under APPRENTICE I.

PIPE-FITTER FOREMAN 5-30.010. Performs duties as described under FOREMAN I.

PIPE-FITTER HELPER 7-32.811. Assists in cutting, threading, and connecting pipe for gas, water, and air lines: selects proper size of pipe from stock pile; holds section of pipe with pipe wrench while PIPE FITTER attaches next section; performs other duties as directed.

PIPE FITTER, MAINTENANCE 4-30.010. A PIPE FITTER or a STEAM FITTER who keeps gas, steam, water, and other kinds of piping in a state of good repair.

PIPE-THREADING-MACHINE OPERATOR 6-95.058. Operates a machine used for cutting external screw threads on pipe or other tubing: selects, installs, and adjusts proper set of threading dies in machine; lifts pipe onto carriage of machine by hand or with the aid of a hoist (m); centers and tightens pipe in carriage; starts machine and manipulates handwheel of automatic feed to engage pipe with dies; stops feed when threads are cut to proper length and removes pipe from dies. May screw and tighten flanges or other fittings on end of pipe. May, if machine is so equipped, cut pipe to required length on pipe-cutting attachment of machine, mounting cutting blades or tool in holder and starting machine which causes blades to rotate and cut through walls of pipe, or causes pipe to rotate as edge of cutting tool is fed against surface until pipe is cut.

PLAIN-MILLING-MACHINE OPERATOR 4-78.031. Performs shaping, planing, and grooving machine work on metal objects, using a machine that cuts the metal with many-toothed, rotary cutters; fastens work on table of machine with bolts or in a vise or special holding fixture; selects appropriate milling cutters and clamps them in machine; moves levers to select appropriate speeds of table feed and cutter rotations; turns handwheels to bring work into position under cutter; starts machine; engages power feed, or turns handwheels to feed work to cutter; stops machine and verifies dimensions of work; removes completed work from machine. May set up a dividing head on table of machine and use dividing head to obtain accurate spacing between cuts, as when machining teeth on gears. May be specifically designated according to type of machine, as PLAIN-MILLING-MACHINE-OPERATOR.

PLANER OPERATOR II 4-78.071. Machines plane surfaces of large metal objects with a machine that carries the work on a moving table beneath rigidly supported cutting tools: adjusts work on planer table and clamps or bolts it securely; selects one or more cutting tools and clamps them in tool holders on machine; moves table slowly by power or by hand and sets reversing dog troops to reverse the direction of table at each end of the stroke; turns handwheel to raise or lower cross rail until it is in position to afford most rigid support to tool heads while still clearing the highest part of the work; clamps cross rail in position; turns handwheels to bring cutting tools into position for beginning cut; turns on motor; moves starting lever and engages automatic feed that moves cutting tool into or across work at end of each stroke; observes operation of machine; stops machine and measures work to check dimensions; adjusts position of work on table and cutting tools as work requires.

PLANER OPERATOR IV 4-33.461. Sets up and operates a single or double surface planer (m) which cuts a smooth surface on rough stock and reduces it to desired thickness: (1) selects knives and fits them into cutter head, using hand tools; turns handwheel to adjust table for depth of cut and to thickness of unplaned stock; adjusts pressure bar to hold stock firmly against knives; inserts one end of stock between feed rolls and guides it through machine; measures planed stock and makes necessary adjustments; resets machine, turns stock over and reruns it through machine to surface other side and reduce it to desired thickness; (2) turns handwheels to adjust table and distance between upper and lower cutter heads to thickness desired in finished stock; sets stock into feed rolls and runs it through machine; may reset cutters and re-run planed stock through machine to further reduce its thickness; starts finished pieces on hand truck or supervises a PLANER OFF-BEARER.

PLANER-TYPE-MILLING MACHINE OPERATOR 4-78.031. A MILLING-MACHINE OPERATOR II who works with a very large milling machine, the table of which is designed to accommodate large and heavy objects.

PLANNING STATISTICIAN (aircraft mfg.) A STATISTICIAN who interprets figures from airplane-production reports to ascertain information for future schedules, such as the current production status of departments, current and estimated orders, rate of production, and availability and capacity of machines.

PLANT ENGINEER 0-19.01. A MECHANICAL ENGINEER. Designs new equipment or improvements to old; makes plant lay-outs and changes in processing methods; supervises, directly or through subordinates, the maintenance of plant buildings, and equipment; contracts for the building of additions to the plant, or for the installation of new machines and equipment and supervises the execution of the contracts; tests newly installed machines and equipment to insure fulfillment of contract specifications.

PLASTER-PATTERN CASTER 5-17.250**. Casts and finishes plaster patterns used in making sand molds for dies, tools, and machine parts, according to specifications: constructs a box-like enclosure around the pattern, filling in cracks and openings with clay; lubricates pattern surface with a special compound to prevent plaster from sticking to pattern surface; mixes plaster and pours it into enclosure; reinforces plaster with hemp fiber and small steel rods or heavy wire; removes hardened plaster cast from pattern; patches broken edges and fractures, using clay or plaster; finishes plaster pattern by scraping and shaping the plaster surfaces by hand, using flat metal scrapers and various measuring instruments and gages; makes identifying marks on pattern with crayon, inked rubber stamps, or a pointed tool; shellacs finished surfaces to harden and smooth them.

PLATER I 4-74.010. Covers metal objects electrolytically with a coating of nickel, gold, or other metal that can be buffed and polished to a bright and relatively rust-proof finish: cleans objects by immersing them in a succession of cleaning baths.

PLATER FOREMAN 4-74.010. Performs duties as described under FOREMAN I.

PLATER HELPER 8-74.10. Assists the PLATER by performing duties of lesser skill, such as cleaning electroplating tanks, placing metal objects to be electroplated on racks.

PLEXIGLAS FORMER 5-77.040**. Cuts and forms, for installation on airplanes, sheets of plastic glass known by the trade name PLEXIGLAS: places template in various positions on the sheets, marking cutting lines with a knife; cuts out parts along inscribed lines, using a power saw; determines the temperature to which the plastic should be heated for satisfactory forming and sets the oven temperature control accordingly; removes protective covering from plastic pieces and places them in an oven; removes the heated pieces from the oven and shapes them over a form block, in an airmold, or in a press, using his knowledge of the plastic and of the forming operations to secure the desired shape; places formed plastic pieces in a jig and works edges for trimming; saws off excess plastic remaining at the edges and grinds them to a smooth finish; removes scratches by sanding and polishing with rouge.

PLUMBER, AIRCRAFT 5-03.562**. A SUBASSEMBLY INSTALLER I. Installs gasoline lines, oil lines, instrument tubing, electrical conduit, and other piping, such as de-icer and engine plumbing in aircraft, using hand tools; marks holes and location of clamps and connections on aircraft frames according to blueprint specifications, using a ruler and crayon; drills holes for clamp mountings with an electric drill; cuts tubing with a hacksaw to the proper lengths and bends it in a jig or by hand to fit into place; bends larger pipe in a bending machine by clamping piece between mandrel and roller of the machine and pulling a lever; flares ends of tubing, using a flaring tool and a hammer, for making connections; bends end of tubes for rubber hose connections using a special hand tool; elongates and tapers tube using an electric wedging machine; uses screw drivers, pliers, and wrenches to clamp pipes onto the frame and make connections to tanks and valves, but does not make connections to the instruments, motor equipment, and other actuating equipment; installs electrical conduit but makes no connection to junction boxes or to any electrical equipment. Usually specifically designated according to the proficiency acquired by the term, pipeman, first class; pipeman, second class.

PLUMBER, FINAL ASSEMBLY; final hydraulic-and-fuel assembler (aircraft mfg.). A MAJOR-ASSEMBLY INSTALLER. Completes the installation of plumbing on airplanes by connecting preinstalled tubing of fuel, oil, hydraulic, and oxygen systems: connects tubing to engine and at junctions of wings and fuselage, using clamps, special fixtures, and various hand tools; checks installation of tubing systems, tightening fittings and connections with a hand wrench as necessary. May test operation of hydraulic, fuel and oil vacuum, and oxygen systems employing special apparatus, ref. FUNCTIONAL-TEST MECHANIC, and remedy defective functioning by adjusting or replacing parts. May install auxiliary gasoline tanks and oxygen supply system by bolting tanks and oxygen bottles into preinstalled supports, connecting tubing, and tightening fittings with a hand wrench. May install tubing in wings and fuselage, ref. PLUMBER, AIRCRAFT. Workers may be specifically designated according to degree of proficiency acquired, as plumber, final assembly, class a; plumber, final assembly, class b; plumber, final assembly, class c.

PLUMBER HELPER, AIRCRAFT 7-03.570**. Assists PLUMBER, AIRCRAFT in preparing and installing tubing and piping in airplanes: cuts, bends, and cleans hard rubber tubing; shapes metal pipes according to specifications, using a hand-operated bending machine; bends and flares the ends of soft metal tubes with hand tools, and fits sleeves and nuts on the flared ends; paints identification stripes or rings on shaped tubes; drills holes for pipe clamps as necessary, and mounts clamps on aircraft parts; assists in the installation of piping and tubing by obtaining necessary tools and materials, holding tubing in place while fittings are secured, tightening nuts, and filing off burrs and excess metal to insure flush fit.

PLUMBER, WING INSTALLATIONS; tubing-and-tank installer (aircraft mfg.) A SUBASSEMBLY INSTALLER I. A PLUMBER AIRCRAFT who installs all rubber and metal tubes from outer edge of wing center section to nacelle; positions and bolts gasoline and oil tanks and their doors and supports by use of jigs and checks tank installations by taking measurements; connects tubing to engine; screws fittings to oil coolers and bolts coolers on wing. May be specifically designated according to degree of proficiency acquired, as: plumber, ring installations, class a; plumber, ring installations, class b; plumber, ring installations, class c.

PNEUMATIC-TOOL REPAIRMAN 5-83.641. A MAINTENANCE MECHANIC II. Repairs pneumatic tools and air motors, such as pneumatic hammers, chisels, and reamers; operates or examines implement or motor to ascertain cause of trouble; takes motor apart and repairs faulty gears, pistons, connecting rods, and other parts, or replaces them with new ones; uses wrenches, reamers, taps, files, and other mechanic's tools.

POLISHER II 6-77.060. Polishes metal articles by holding the articles at various angles against a rotating emery-coated, cloth wheel until all surfaces are uniformly polished; selects proper polishing wheel for type of finish desired (coarse or fine): applies tallow wax or other wheel-dressing compounds to the wheel to aid in polishing; polishes those parts of the articles that cannot be reached by the wheel by rubbing with emery cloth.

POLISHER, BELT 6-77.060. A POLISHER II who polishes articles of hardware by holding them against an emery-coated belt instead of against an emery-coated wheel.

PORTER II 2-86.20. Keeps the working areas in the production departments of a factory or mill in a clean and orderly condition (as opposed to cleaning the premises of an office, apartment house, or commercial establishment); sweeps floors and aisles and deposits sweepings in trash cans; tidies working areas by arranging hand trucks, boxes, materials, and other articles in orderly manner. May dust and clean machines.

POSITIVE-FEED-HACKSAWING-MACHINE OPERATOR 8-78.10. A LABORER, PROCESS. A HACKSAWING-MACHINE OPERATOR who saws metal stock to length on a machine equipped with a feed screw by which the blade may be fed through the metal at a constant rate.

POWER-BRAKE OPERATOR III 6-94.207**. A BRAKE OPERATOR, MACHINE II who shapes aircraft sheet metal into angles, curves, and Z-bands.

POWER-HOUSE ENGINEER 5-51.010. Works in a small central power or lighting plant that supplies mechanical or electrical power for distribution or for the operation of machines and equipment in an industrial plant, operating and maintaining stationary engines, turbines, generators, boilers, switchboards, transformers, and other equipment and machines; supervises FIREMAN, POWER-HOUSE, POWER HOUSE OILER, and other workers; directs the storing and handling of coal; makes tests of various machines under his dharge; keeps records of the performance of machines, fuel consumed, temperature, and other items.

POWER-HOUSE OILER 7-71.010. An OILER II who cleans, oils, and greases such machines as turbines, generators, exciters, converters, and pumps in a powerhouse, and assists in repairing machines. May assist in starting, stopping, and operating machines.

POWER-ROLL OPERATOR 9-02.01. A LABORER, PROCESS. Feeds sheets of metal by hand to rollers of machine, comparable to a household wringer, that smooths out bumps, dents, wrinkles, and other imperfections.

POWER-ROLLS-OPERATOR HELPER (aircraft mfg.) A LABORER, PROCESS. Performs duties of lesser skill to assist FORMING-MACHINE OPERATOR IV in the forming of aircraft parts: places metal conveniently on the work bench; removes formed pieces; helps to verify the parts with templates.

POWER-SHEAR OPERATOR I 6-88.664. Cuts metal sheets, rods, plates, or objects to size or length with a power press equipped with cutting blades instead of dies; sets stop gages to size; feeds metal under blade and against stops; depresses pedal actuating sheer blade. May lay out cutting lines.

POWER-SHEAR-OPERATOR HELPER 9-03.01. A LABORER, Or a LABORER, PROCESS. Performs duties as described under HELPER III.

PRECISION-LATHE OPERATOR 4-78.011. AN ENGINE-LATHE OPERATOR who makes and repairs such objects as cutting tools, fixtures and gages with an accurate lathe (m) and special attachments for precise or unusual lathe work.

PRESIDENT 9-97.01. Is head administrator of a business organization; directs policies and handles complex administrative matters. Usually presides over a board of directors; often represents firm or organization in dealing with other organizations or with the government. Often directs the every-day operating activities of firm.

PRESS OPERATOR (aircraft manufacturing) A general term applied to a worker who operates any of the various types of presses to bend, stamp, punch, trim, or perform other shaping operations on metal. Usually specifically designated according to type of press operated, such as FOOT-PRESS OPERATOR; JOGGLE-PRESS OPERATOR; KICK-PRESS OPERATOR; TOGGLE-PRESS OPERATOR.

PRIMER SPRAYER 7-16.210. A PAINTER, SPRAY I (any ind.) who applies the primer, or first coat of paint, to the inside and outside of automobile bodies and parts as they pass by on a conveyor; usually works in groups, each worker being responsible for a particular area, such as a door or half the cowl.

PROCESS PLANNER; process-planning clerk (aircraft mfg.). Compiles from production drawings detailed schedules for production of aircraft parts, assemblies, and equipment: studies production drawings and, using his knowledge of aircraft metals, methods, and machinery, determines processes, methods, tools, jigs, and other equipment required; writes schedules indicating detailed processing within each department and routing between departments to insure efficient production processes. May interpret tool drawings.

PRODUCTION CLERK II 1-18.66. Keeps a record of the number and types of units produced, and makes up production schedules from sales orders, showing the number and type of units to be produced. May estimate the rate of production, notifying customer when he can expect the merchandise and informing the shop the time when production is to be completed. May keep a record of the amount of material used.

PRODUCTION PLANNER, EXPERIMENTAL (aircraft mfg.) A PRODUCTION PLANNER who specializes in making alterations and experimental changes on airplanes, such as the installation of long-range fuel tanks, special cargo compartments, spray-dusting devices, and untried innovations of equipment and design.

PRODUCTION PLANNER; installations planner; structures planner (aircraft mfg.). Plans production operations for the manufacture of airplanes: studies production blueprints of airplane and its parts, tool analysis sheets, sequence of operations reports, and machine load and capacity data to determine allocation of parts to assembly line positions, and processes necessary to fabricate, assemble, and install airplane parts; issues instructions to each department on sequence of operations, coordinating the flow of work to insure efficient and profitable production.

PROFILING-MACHINE OPERATOR I 4-78.111. Sets up and operates a special milling machine that follows the contours of a model or template to reproduce articles of complex shape automatically; places cutting tools and work in machine and adjusts cutting speed of machine, clamps a model or template for the object to be made on a fixture attached to the machine; fastens a tracing finger of the same dimensions as the milling cutter on a secondary or tracing spindle of machine; turns handwheels to bring tracing finger into contact with template and milling cutter into contact with work; starts machine; observes operation of machine; stops machine from time to time to measure work to change milling cutter; removes work from machine when completed. Usually specifically designated according to parts machined as GEAR PROFILER.

PROFILING-MACHINE OPERATOR II 6-78.111*. Duplicates in metal the broad outlines and the fine details of a pattern by use of a profiling machine which has been set up by another worker, usually a JOB SETTER II: directs cutting action on workpiece by moving a guide pin, which is synchronized with the cutting tool, over a pattern; gages cut with calipers, micrometers, and verniers; may make minor adjustments; consults foreman when important adjustments are necessary. Does not set up machine or make major adjustments.

PROFILING-MACHINE OPERATOR III 6-78.112*. Trims excess metal from edges of flat or formed airplane parts in accordance with templates; selects profile blocks corresponding to contours of part and clamps part between blocks; adjusts cutter and starts machine; grasps the clamped profile blocks with both hands and manipulates it against rotating cutter to trim excess metal.

PROFILING-MACHINE-OPERATOR HELPER 9-03.01**. A LABORER, PROCESS. Performs duties as described under HELPER III.

PROPELLER-INSTALLATION ASSEMBLER 5-03.562**. A SUBASSEMBLY INSTALLER I. Puts together and installs fixed and variable-pitch propellers (including hydromatic, electrically operated, and full-feathering types) on aircraft engines using wrenches, pliers, and special tools; cleans all parts in solvent and examines each piece for flaws before installing; hones or files battered and roughened threads; adjusts and alines pitch control mechanism with special tools; lifts propeller in mounting position with a chain hoist and sling; mounts assembled propeller by alining splines on shaft and hub and fastening on hub nut with a special wrench; attaches streamlined nose piece of propeller (spinner or dome) to doweled mounting and tightens dome-lock ring with a special wrench; examines pitch range settings of propeller by turning the blades by hand and comparing the marks on propeller hub and blade; adjusts and fastens tubes for throwing de-icing fluid from the propeller hub over the blades, using hand tools.

PUBLIC-RELATIONS MAN 0-06.97. Selects and assembles favorable publicity material for groups or organizations, releasing it through the media of magazines, newspapers, posters, and the radio: scans statements of policy to secure most favorable publicity; writes news releases and submits photographs to newspapers; purchases advertising space in newspapers or magazines and prepares advertisements; makes arrangements for billboard displays; writes script for radio advertising.

PUNCH-PRESS OPERATOR I 6-88.622. Operates a power press (m) to punch holes in light metal stock for rivets, nails, screws, bars, or other purposes; sets measuring guides or stops for holding material in correct position under punch die, inserts metal under punch or punches and against guides; starts machine, causing upper punch or punches to descend and punch out holes. May set up and lock proper sized punches and dies in machine.

PUNCH-PRESS OPERATOR, AUTOMATIC 6-88.624. Tends one or more automatic punch presses that punch holes in light metal stock by the action of appropriate dies; threads strip of metal through guide rollers, or loads hopper with metal articles; starts machine and watches operation as machine automatically feeds metal to dies. Machine may also cut metal strips to correct length.

PUNCH-PRESS OPERATOR, HAND 6-88.625. Punches holes in sheet metal parts with a hand operated bench punch (m); installs proper sized punch and die in machine; lays part on die in machine and shifts part until lay out mark is under point of punch; steadies part with one hand and pulls lever with other to force punch through metal and cut hole. May measure and mark location of holes on the metal parts.

PUNCH-PRESS OPERATOR HELPER 9-03.01. A LABORER, PROCESS. Performs duties as described under HELPER III.

PUNCH-PRESS SET-UP MAN (aircraft mfg.). A DIE SETTER I who sets up and alines punch press dies used to stamp out metal aircraft parts.

PURCHASING AGENT 0-91.60. Purchases, at the most favorable prices consistent with quality, quantity, and other factors, raw materials, equipment, machinery, and supplies necessary for the operation of the particular organization (industrial plant, governmental unit, or public utility) in which he is employed; goods purchased are processed, consumed, and used in the organization and are not purchased for resale at a profit.

RACK LOADER II 8-87.10**. A LABORER, PROCESS. Arranges various shaped parts in racks, preparatory to heat treating: hangs parts in racks with wire hooks, punching holes in edges of parts for insertion of hooks; positions curved and odd-shaped parts in racks, bracing them with metal rods to reduce deformation when heat treated; pushes racks into furnace.

RACKER V 8-74.10. Attaches metal objects, previously cleaned for electroplating, to racks with wire so objects can be suspended in the electroplating solution.

RADIAL-DRILL-AND ROUTER-TABLE LOADER 6-94.222*. A SHEET-METAL LAY-OUT MAN IX who marks guide lines on sheet metal for RADIAL-DRILL OPERATORS III and RADIAL-ROUTER OPERATORS, according to specifications: positions template or router blocks on sheet metal, securing pattern in place with lead weights or clamps; marks guide lines so that maximum number of parts can be fabricated from the sheet metal; stacks sheet metal on machine table so that specified number of parts can be obtained from machine operations; alines stack of sheet metal, drills holes through stack with an electric hand drill, and pounds large-headed nails through the holes to hold the stack in position for the machine operators.

RADIAL-DRILL OPERATOR III 6-78.082*. A RADIAL-DRILL-PRESS OPERATOR who bores holes in stacks of sheet metal in accordance with templates: piles sheet metal on drill table until stack reaches desired thickness for drilling; alines sheets and positions working template on stack, securing template in place with lead weights; starts machine and drills holes in stacked sheet metal as indicated by guide holes in templates; changes drills in machine according to type and size of hole required.

RADIAL-DRILL-PRESS OPERATOR 6-78.082. Performs such operations as drilling, and reaming, with a large drilling machine, the drill spindle of which can be brought to bear anywhere within a large arc by moving the drill assembly long a horizontal, radial arm and swinging the arm about its anchorage: fastens drill, reamer, or other tool on spindle of machine; places or fastens work on drill table; alines drill over work, and starts machine; pulls hand lever to feed tool to work or engages automatic feed; withdraws tool from work and stops machine.

RADIAL-ROUTER OPERATOR 6-94.226*. Shapes sheet-metal blanks with a radial-routing machine, using steel patterns fastened to wooden blocks (router blocks) as guides; checks the placement of patterns on stacks of metal blanks on machine table by RADIAL-ROUTER OPERATOR HELPER; lowers router tool into cutting position; grasps handles of cutting tool and manipulates guide collar of cutter around pattern to cut and shape metal blanks, controlling the cutting speed by varying the pressure on operating handles of cutting tool; occasionally checks shaped parts for conformity to specifications, using calipers and rulers.

RADIAL-ROUTER-OPERATOR HELPER 9-03.01*. A LABORER, PROCESS. Performs duties as described under HELPER III.

RADIO-AND ELECTRICAL INSPECTOR 4-97.930**. An ELECTRICAL INSPECTOR II who examines and tests aircraft electrical and radio installations, such as radio sending and receiving sets, instruments, motors, and wiring, using instruments and observing the operation of the equipment during tests.

RADIO MECHANIC II 5-83.447**. Inspects, adjusts, and repairs medium and low-powered radio transmitting and receiving equipment; tests radio equipment, using instruments, such as ammeters, voltmeters and tube testers; replaces defective tubes, condensers, and generators, solders or tightens loose connections, cleans and lubricates motor-generators, tests and charges batteries, and performs other similar repair and maintenance duties; routes parts requiring major repairs to radio repair shop; adjusts receivers for sensitivity and transmitters for maximum output by turning set screws. Usually specifically designated according to types of radio equipment worked on, as RADIO MECHANIC, GROUND INSTALLATIONS; RADIO MECHANIC, AIRCRAFT INSTALLATIONS.

RADIO MECHANIC, GROUND INSTALLATIONS 5-83.447**. A RADIO MECHANIC II who inspects, adjusts, and repairs portable ground radio sets.

RADIO OPERATOR, 0-61.30; transmitter operator; transmitter technician; wireless operator (gov. ser.; radio broad; water trans.) Controls the operation of and adjusts all the equipment associated with the transmitter of a radio station and assumes responsibility for compliance with federal regulations: starts and shuts down transmitter; adjusts tone quality and volume of radio program, listening to it through a loudspeaker or headphones and observing volume indicators; keeps a complete operating log as required by the federal regulations. Must hold a federal license.

RADIO REPAIRMAN I 5-83.411. Repairs defective radios; tests circuits, tubes, and other parts, using various testing meters and devices; isolates defects, and either fixes them or replaces defective parts with new ones; resolders loose connections. May install radios in automobiles. May install radio aerials.

RAW-STOCK-SAW OPERATOR (mach. shop). A FRICTION-SAWING-MACHINE OPERATOR who cuts aircraft metal tubing, bars, and extrusions on a friction saw equipped with a thin abrasive wheel.

REAMER IV (aircraft mfg.) A DETAIL ASSEMBLER I. Reams drilled holes in aircraft parts and temporarily bolts parts together: places part in a holding jig and clamps it securely; reams out holes using a portable drill fitted with a reamer; smooths edges of holes with emery paper; alines holes in parts and bolts them together.

REAMER HELPER (aircraft mfg.) A LABORER, PROCESS. Performs duties of lesser skill to assist REAMER IV in reaming holes in aircraft parts: assists in setting up jigs; smooths the edges of reamed holes with emery cloth; tightens nuts on bolted assemblies; cleans tools.

REAMER, MACHINE 6-78.081 or 6-78.083. A SINGLE-SPINDLE-DRILL-PRESS OPERATOR or a MULTIPLE-SPINDLE-DRILL-PRESS OPERATOR who performs only reaming operations.

REAR-DECK ASSEMBLER 7-03.542**. A SUBASSEMBLER II. A SMALL-PARTS ASSEMBLER III who specializes in assembling rear decks (fuselage tops) of airplanes from prefabricated parts.

RECEIVING CHECKER II 1-34.15. Insures the completeness and correctness of incoming shipments, including articles received for alteration or repair.

RECEIVING INSPECTOR (aircraft mfg.) Inspects incoming parts and material, purchased from other concerns, for defects and compliance to specifications: visually examines parts and material for defects or damage incurred in transit; measures preformed parts with measuring instruments, such as micrometers, gages, check jigs, and machinists' scales, for conformity to specifications and catalog listings; counts items received to insure completeness of purchasing order; stamps approved items, attaches rejection slips to unsatisfactory products and routes them to be re-worked.

RECEPTIONIST II 1-18.43. Receives clients or customers coming into an establishment, ascertaining the individual's wants and directs him accordingly: obtains caller's name and makes arrangements for him to see the desired person; directs or shows the caller to his destination in the establishment, keeps a record of name of callers, time of call, nature of business and person called on. May make future appointments.

REJECTED-PARTS CHECKER AND TEMPLATE MAKER (aircraft mfg.). Makes corrections in shaped metal tubing or forms new tubing required by changes in airplane design, for use as patterns, using flaring and bending machines: examines tubing and determines changes necessary; reshapes the preformed tube to meet requirements or forms new part from soft metal tubing for use as templates in reshaping parts or manufacturing new tubes, ref. TUBING BENDER II; issues orders for tubing to be reshaped and routes templates to appropriate departments.

RESEARCH ANALYST (aircraft mfg.). An AERONAUTICAL ENGINEER. Specializes in developing, improving, and testing new airplane materials, such as plastics, glass, paints, and metals, conducting research to make use of their qualities in resisting engine vibration, fluttering, and heat and sound penetration for the construction of aircraft.

RESEARCH-AND-STATIC-TEST MECHANIC (aircraft mfg.). Subjects metal airplane parts to physical tests to discover and remedy faults of design and fabrication: exposes the parts to controlled stress and strain, using power-testing machines; measures resulting variations from normal with precision instruments, such as micrometers, verniers, and calipers and records results on special forms. May sketch designs for new testing tools and equipment.

REWORK INSPECTOR (aircraft mfg.) Makes final inspection of fabricated parts rejected by previous inspection to determine disposition of parts: determines from his knowledge of airplane construction, function of various parts, tolerances allowed beyond those specified, advisability of reworking part based on time and cost for reprocessing, and by the use of precision measuring devices, such as micrometers, scales, and calipers, whether part may be used as it is, made useable by reworking, or be scrapped; writes recommendation for disposal and attaches to part for return to appropriate department.

RIB ASSEMBLER 7-03.542**. A DETAIL ASSEMBLER I. Assembles precut sheet metal parts and metal tubing in a jig to make airplane ribs; positions fabricated sheet metal parts and tubing in their appropriate places in the jig according to instructions; temporarily fastens parts together with metal pins preparatory to riveting; reams out drilled rivet holes with a portable electric drill.

RIB BUILDER 6-33.925**. An AIRPLANE WOODWORKER II who assembles rib frameworks for airplane wings and tails of prefabricated wooden parts.

RIB-FRAME BUILDER 7-03.542**. A DETAIL ASSEMBLER I. Assembles the members of airplane wing rib structures in a jig, and temporarily secures them in position with bolts, screws, or tack welds prior to the final assembly, gluing, riveting, or welding operations.

RIB STITCHER 7-03.010**. A SEWER, HAND XVI who stitches fabric covering and reinforcing tape to airplane parts, such as ailerons, rudders, and elevators by passing the needle around the ribs of the part; ties a knot in the thread at the top side; trims reinforcing tape, using scissors.

RIDDLER 8-78.10. A LABORER, PROCESS. Cleans finished metal parts by shaking them in a coarse sieve (riddle) to shake off metal chips; brushes parts with a solvent, such as heavy naphtha.

RIGGER V 9-65.64. A LABORER. Moves equipment and machinery from one shop location to another by use of roll ers, trucks, chain blocks, and block and tackles, making necessary attachments of chains, ropes, or cables, to move heavy loads quickly and safely.

RIGGER IX 5-03.572**. A MAJOR-ASSEMBLY INSTALLER. Installs the cables that connect airplane cabin controls to ailerons, rudders, and fins: connects one end of cable to flying control by hooking cable eye to clamp on control; threads cable through pulleys in wings and fuselages; connects free end of cable to central control column with clamps or links; adjusts length of cables by setting controls at neutral and tightening the cable turnbuckles to equalize the tension on the control cables; tests adjusted cables with a tensionmeter. May install pulleys in wings and fuselages, locating them according to blueprints and drilling and threading the necessary holes.

RIGGER (X) (aircraft mfg.) flight-controls assembler; flight-controls rigger. Adjusts the operation of preinstalled control surfaces, such as ailerons, rudders, and elevators and their cockpit control levers: defines extent of movement of control levers by attaching stops to cables, following blueprint specifications and using machinist's scale; limits extent of movement (throw) of control surfaces by steering them at specified angles, using a protractor, adjusting turnbuckles to tighten or loosen cables, and checking tension of cables with a tensionmeter; wraps turnbuckles with safety wire. May be specifically designated according to degree of proficiency acquired, as rigger, class a; rigger, class b; rigger, class c.

RIGGER HELPER III 9-03.01**. A LABORER, PROCESS. Performs duties as described under HELPER III.

RIVET HEAT-TREATER 6-87.010*. Alters the physical characteristics of aluminum alloy rivets to produce a specified degree of hardness; subjects rivets to controlled temperatures in a molten salt bath and cools them rapidly in water; stores heat-treated rivets in a refrigerator to retard their hardening until used; delivers rivets to various departments.

RIVET INSPECTOR II 6-95.085**. Inspects the rivets in riveted airplane small parts and subassemblies: examines rivets for a correctly spread head, ordering the removal of any which are crooked, cracked, or weak; inspects the members of riveted structures for strain caused by misalinement of rivet holes or poorly driven rivets. May inspect size of rivets and rivet holes before riveting, using gages.

RIVET-MACHINE OPERATOR 6-93.195*. Tends a machine which forms rivets from spools of wire; sets dies for type of rivet desired; regulates stroke of machine for length of rivet; threads rivet wire into machine from rotating spools which unwinds as rivets are formed; may make repairs and adjustments to machine while in operation.

RIVET SERVICE MAN (aircraft mfg.) A LABORER, PROCESS. Stores heat-treated durat rivets in a small refrigerator and issues them for use: secures specified quantities of rivets from cold storage boxes and places them according to size of head and shank in the various compartments of the small refrigerator in his charge; issues requested rivets in limited numbers so that they do not reach room temperature before being used; sorts returned rivets roughly according to size and shape, and delivers them to RIVET SORTER.

RIVET SORTER (aircraft mfg.) A LABORER, PROCESS. Sorts aircraft rivets to size of head and shank and according to metal or alloy of which they are made: places specified quantities of rivets, previously rough sorted by RIVET SERVICEMAN, in a series of rivet sifters which separate rivets according to area of rivet head, and length and diameter of shank; removes sifted rivets from machines and sorts them according to type of metal or alloy; routes sorted rivets to stock room or for additional processing.

RIVET SPINNER 6-95.075#. Rivets together various parts to form complete units or subassemblies; alines parts of object and inserts rivet, positioning parts in machine; depresses pedal to lower revolving spindle against the bur end of the rivet to flatten it, securing the parts together.

RIVET SQUEEZER (aircraft mfg.) Fastens together narrow edges of two component aircraft parts, using a portable pneumatic rivet squeezer: inserts rivets in holes; places two dies of rivet squeezer over head and shank of rivet; presses trigger of the rivet squeezer to apply pressure to dies that flatten shank of rivet, and to secure two parts together.

RIVETER, AIRCRAFT 6-95.080*. Joins together airplane structural members, assemblies, subassemblies, and small parts of aluminum, stainless steel, aluminum alloys, or other metals with various kinds of rivets; drills and reams rivet holes in metal, inserts rivets and forms the rivet head using hand rivet sets and hammers, pneumatic riveting hammers, and riveting machines. May buck own rivets or be assisted by BUCKER-UP IV.

RIVETER, ANGLE 6-95.074 . A RIVETING MACHINE OPERATOR IV who reinforces the baffle plates of airplane fuel tanks so that they will be sufficiently strong to support the tank shell, by riveting angle braces to the baffle plate flanges.

RIVETER, HAND IV 6-95.081**. Joins together prefabricated airplane parts to make complete units, such as wing ribs and fuel tanks, using a rivet set and light weight hammer: alines parts and inserts rivets in predrilled rivet holes; places rivet set against shank and strikes it with the hammer to spread the shank and secure the parts together. May buck own rivets or direct a BUCKER-UP IV in doing so. May drill rivet holes or drill out defective rivets, using a portable electric drill.

RIVETER HELPER, AIRCRAFT 9-03.01. A LABORER, PROCESS. Performs duties as described under HELPER III.

RIVETER, PNEUMATIC III 6-95.082**. Joins the metal skin to the skeletons of airplane assemblies and subassemblies, such as tails, fuselage sections, and ailerons, using a pneumatic riveting hammer: inserts rivets in appropriate predrilled holes, or directs BUCKER-UP IV to do so, removing temporary bolts or fasteners as necessary; places the drive head of the pneumatic hammer against the rivet shank and pulls trigger to actuate hammer that spreads the rivet, stopping on signal from the BUCKER-UP IV or when the sound of hammering indicated the rivet is spread. May buck as well as drive the rivets, and may spread rivets located in difficult positions using a special riveting gun that usually forms rivet heads with one stroke of the riveting hammer. May drill necessary rivet holes before inserting the rivets, or drill out defective rivets, using a portable electric drill. May be specifically designated according to the degree of proficiency attained, as riveter, first class; riveter, second class; or according to the part riveted, as riveter, wing; riveter, tail.

RIVETER, RIB 6-95.081**. A RIVETER, HAND IV who rivets together in a jig the previously assembled parts of airplane wing skeletons.

RIVETER, SHELL 6-95.081**. A RIVETER, HAND IV who rivets preformed sheet-metal shells to airplane fuel tank skeletons.

RIVETING-MACHINE OPERATOR IV 6-95.074#. Operates a riveting machine to rivet together parts of various articles: fills hopper of machine with rivets or alines parts together and inserts rivets; holds objects to be riveted on anvil of machine; depresses pedal to lower ream that flattens ends of rivets to unite parts of objects. May punch rivet holes in articles by replacing riveting tool with a punching tool.

RIVETING-MACHINE-OPERATOR HELPER; rivet-squeezer-operator helper (any ind.) A LABORER, PROCESS. Fits parts together and inserts rivets into the previously drilled holes; piles riveted parts in boxes or places them on skids. May enlarge the holes or drill new ones, using an electric hand drill, ref. DRILLER, HAND III.

RIVETING-TOOL GRINDER 6-78.167**. Shapes the hammering ends of riveting tools to the measurement and contour required for forming rivet heads, by drilling, grinding, and polishing the tool in a small lathe (m); clamps riveting tool to the rotating spindle and attaches proper drill to the chuck in the machine; turns hand wheel to bring drill in contact with work; starts machine that rotates the part and forces the drill against the part, drilling a depression of required depth in the tool end; replaces drill with an abrasive stone attached to an air-driven motor; starts air motor and lathe motor simultaneously to grind the hole in the tool end to the proper shape; places a sample rivet head in the hole to check the contour; polishes the interior of the hole to exact contour by forcing emery cloth into the hole with a round-headed hand tool while the part is rotating in the lathe.

ROCKWELL HARDNESS-TESTER 4-87.910. A term applied to a HARDNESS TESTER when determining the hardness of metal samples by the Rockwell method: places test piece on table on machine, causes machine to press an accurately made steel ball or a diamond point against the test surface with a definite force, and reads scale on machine that indicates penetration of test piece surface by ball or point; increases force with which ball or point is pressed against test piece and reads scale to determine penetration under new force; derives hardness number from scale readings by substituting them in a formula, or reads hardness directly from calibrated scale on machine.

ROLLING-MACHINE OPERATOR IX (aircraft mfg.) A PIPE BENDER, MACHINE who shapes steel and aluminum aircraft tubing.

ROTARY-SHEAR OPERATOR II 6-94.204. Operates a machine to cut circular or curved sheet-metal blanks; marks cutting line on material with chalk or scriber, using pattern or template as guide, if lay-out is not made by SHEET-METAL LAY-OUT MAN; inserts edge of piece between the two cutting disks of rotary shear (m); steps on pedal to start disks revolving. Manipulates piece, as disks cut away excess metal, following marked line.

ROTARY-SURFACE-GRINDER OPERATOR 6-78.515. Operates one or more automatic or semiautomatic grinding machines of various types to rough-grind or finish-grind plane surfaces of parts such as clutch plates, piston tops, or pinion keys: fills hopper of automatic machine by hand or inserts parts individually into electro-magnetic chuck; may regulate length of operation or grinding pressure; empties machines of finished parts or removes parts by hand from magnetic chucks. May gage parts for accuracy and set up machine.

ROUTER OPERATOR I 4-33.411. Cuts and shapes various designs in wooden stock by machine: clamps and tightens bit in chuck of machine; inserts guide pin in hole of machine table, places groove of jig over pin, adjusts table for depth of cut, and sets table stops with wrench; either (1) clamps stock in place on jig and starts machine, depresses pedal to raise table and feed stock into rotating bit, or moves jig in horizontal position around pin and under bit to cut design in stock, or (2) fastens part securely to table, mounted on roller bearings, and moves table under routing tool to cut designs according to drawings or sketches, regulating depth of cut by pedal. May operate machine equipped with automatic device for varying depth of cut.

ROUTER OPERATOR III 6-94.227*. Shapes sheet-metal blanks with a routing machine, using templates as patterns: clamps blank between templates with "C" clamps; places assembly flat on machine bed against a guide pin and depresses pedal to lower a rotating cutter into workpiece; holds and turns assembly against the guide pin until template has made one complete revolution under cutter. Frequently works to tolerances as fine as .005 inch.

ROUTER OPERATOR, PORTABLE 6-94.235**. Trims unfinished edges of sheet-metal aircraft parts, such as noses and stabilizers, using a portable router; places sheet-metal part to be trimmed in a router jig; trims burrs from the edges of the parts with shears; bolts a router guide to jig; starts router and runs it along router guide, cutting away excess metal and leaving a smooth edge; locates unevenly routed portions (high spots) of sheet-metal using a straight edge and files them down by hand.

ROUTERMAN, HAND; portable hand-router operator (aircraft mfg.). A LABORER, PROCESS. Clamps T-shaped or L-shaped magnesium bars (used as glass supports) for bomber noses in router jigs; cuts out notches, or drills holes in retainer, following jig pattern, using a portable hand router (m). May file, scrape, and smooth metal pieces, by hand, for use in fabricating airplane parts.

RUDDER ASSEMBLER 7-03.552**. A SUBASSEMBLER II. A SMALL-PARTS ASSEMBLER III who specializes in assembling airplane rudders from prefabricated parts.

RUBBER-TANK-LINING INSTALLER (aircraft mfg.). A SUBASSEMBLY INSTALLER. Cuts out and cements leak-proof rubber lining and canvas or leather covering on exposed sections of airplane gas tanks: cuts lining and covering to fit exposed sections of gas tanks, such as interior fuselage and wheel wells, using hand tools; brushes rubber solvent and cement on rubber lining and presses it and canvas or leather covering to exposed gas tank sections; screws metal clamping strips over lining and covering, using hand or electric-powered tools.

RUBBER-TEX INSTALLER (aircraft mfg.) A LABORER, PROCESS. Installs rubber composition known by the trade name Rubber Tex inside wing structure to provide base for tank installation: mounts precut, numbered composition sections on test board, fitting them over nails at correspondingly numbered positions; marks inaccurately cut sections, and trims them with a band saw (m); applies separating solution to hands to prevent adhesive from sticking; coats sections with adhesive, using brush; removes sections from board, places them between ribs in locations specified by blueprint numbers, and applies pressure by hands to secure sections in position.

RUBBER-TEX-INSTALLER HELPER (aircraft mfg.) A LABORER, PROCESS. Assists RUBBER TEX INSTALLER in fitting rubber composition known by the trade name Rubber Tex to interior of wing structure: connects respirator hose to compressed air system by opening valve and fits device over face to prevent inhalation of adhesive fumes; applies separating solution to hands to prevent adhesive from sticking; brushes composition sections and wing surface with adhesive solution and places Rubber-Tex sections between ribs, applying pressure by hands to secure them.

SALES ENGINEER 0-19.04. Sells chemical, mechanical, and electrical equipment and supplies, and other products that require professional or technical knowledge over and above a trade knowledge based on familiarity with products sold: calls at factories and industrial plants, and on engineers, architects, and other professional and technical workers, attempting to convince prospective customers of the desirability of purchasing from him; computes the cost of installing equipment and calculates saving in production costs anticipated by use of equipment: makes estimates from blueprints, plans, or other records submitted by potential customers; draws up and proposes changes in equipment or use of materials which would result in cost reduction or more efficient operation of enterprise. Usually specializes in selling one product or a group of closely related products, such as technical electrical equipment, industrial machinery, mechanical rubber equipment, chemical goods, or mineral products.

SALVAGE ENGINEER 0-19.91*. Plans and directs the salvaging of metals, oils, packing, and mechanical equipment; supervises all operations of a salvaging plant applying a wide knowledge of the use and properties of metals and materials used in manufacturing, of salvaging processes, and of the operation and maintenance of equipment, such as straightening and threading machinery, power hammers, punches, shears, presses, grinders, centrifuges, and smelting tanks, used in salvaging processes.

SALVAGE INSPECTOR II (aircraft mfg.) processed-stock inspector; rework man; salvage man; salvage inspector. Examines, by sight and with precision measuring instruments, rejected or obsolete airplane parts, materials, and assemblies to determine whether they can be salvaged by reworking or repairing: inspects the processed stock from various departments within the plant to determine which parts are obsolete (due to change in design), improperly identified, extent of damage, or otherwise not usable, using precision measuring instruments, such as calipers, gages, protractors, scales, and measuring tape sets up procedures for disposition of stock and returns items to appropriate department for repairing, reworking, or scrapping. May cut out sample pieces of material for laboratory analyses, using a hand or power-operated hacksaw, drill press, or specially designed tools.

SALVAGE SORTER (aircraft mfg.)--Salvages from plant floor sweepings and scrap and refuse boxes a variety of material such as scrap metal, rubber, and rags, by sorting the larger items by hand, and sifting metal borings through a mesh screen to eliminate foreign items; segregates for convenient disposal the different items by placing materials of like character in separate containers, being guided in the sorting by marks on the sheet-metal and general instructions on other material, performing this work under supervision.

SANDER I 9-03.01. A LABORER, PROCESS. Rubs automobile parts by hand with sandpaper, emery cloth, steel wool, or other abrasive, after filing and grinding, painting, or filling with putty, to prepare for further painting.

SANDER, FABRIC 9-03.01**. A LABORER, PROCESS. Sand papers the fabric covering on airplane fuselages to prepare the surface for additional coats of paint; determines by visual inspection when the surface is ready for further processing.

SANDBLAST-ROOM OPERATOR 6-82.720. A SANDBLASTER I who works in an enclosed room. Cleaning scale, rust, and dirt from castings and other metal stock prior to painting or machining.

SANDBLASTER I 6-82.720. Cleans paint, scale, grease, tar, rust, and dirt from the surface of metal objects, usually preparatory to machining, painting, polishing, or plating, by directing a stream of sand, grit, or steel shot and compressed air from a nozzle against the surface of the objects; wears heavy gloves to protect hands when holding objects in sandblast stream, and a helmet or hood as protection against breathing sand-laden air, and to protect eyes.

SANDBLASTER HELPER 9-65.28. Loads and regulates operation of machine which produces a sandblast for cleaning dirt and scale from metal or masonry surfaces: connects compressed-air hose and sand hose to machine; dumps sand abrasive into hopper of machine; opens air valve; opens sandblast valve at signal of SANDBLASTER I or SANDBLASTER II, releasing sand through the hose under pressure; replenishes mixture in hopper, and regulates sandblast pressure by manipulation of valves.

SAW FILER, HAND 7-84.230. Sharpens and adjusts teeth of band, circular, and hand-woodworking saws by hand: clamps saw in vise; files each tooth, regulating angle of stroke of file according to class of work and type of wood to be sawed; adjusts set (cutting width of teeth) of saw by spreading (flattening) points of teeth with a hammer and swage, or by springing alternate teeth in opposite directions with a saw-set (special pliers).

SAW FILER HELPER, MACHINE 9-65.64. A worker who assists another worker by performing specific or general duties, usually of lesser skill, such as keeping a worker supplied with materials, tools, and supplies; cleaning working area, machine and equipment; performing routine machine operations, such as feeding or unloading machine; and assisting worker by holding materials or tools. May be expected to learn the occupation or trade of the worker he assists. Classifications are made according to the type of work involved. Typical classifications for helpers of this type are DRY-CLEANER HELPER (clean., dye., & press.); MACHINIST HELPER (mach. shop).

SAW FILER, MACHINE 7-84.240. Sharpens, repairs, and conditions hand, circular, gang, and other types of woodworking saws: inspects saw by touch and with a straitedge; (I) cuts broken teeth from band saw by shearing out section of blade; splices blade by beveling ends to be united and welding or brazing them together; brazes or welds cracks in saw blade; removes dents, twists, and kinks by hitting saw blade with a light hammer as it is supported on a flat, steel table; (2) adjusts set of saw teeth (cutting width of teeth) by spreading (flattening) points of teeth with a hammer and swage, or by springing alternate teeth in opposite directions with a saw-set (special pliers); (3) clamps saw blade in saw-sharpening machine; adjusts spacing (distance between teeth), angle of bevel, and depth of cut of file or abrasive wheel; starts machine that automatically moves blade as file or abrasive wheel sharpens each tooth; removes saw and dresses teeth with hand tools. Tensions band saws (removing strains which cause blade to whip or wobble) by running blade between closely set rollers, or by stretching and hammering portions of the blade.

SAW OPERATOR (aircraft manufacturing) A general term applied to a worker who operates any of the various types of power saws to cut metal in forms, such as sheet, bar, stock, tubes and extrusions. Usually specifically designated according to type of saw operated such as BAND-SAWING-MACHINE OPERATOR; CIRCULAR-SAWING-MACHINE OPERATOR; DO-ALL-SAW OPERATOR; HACKSAWING MACHINE OPERATOR; JIGSAW OPERATOR.

SAWDUST DRIER 8-74.10. Dries rinsing water from large metal objects after they have been electroplated by tumbling the objects about in a box of sawdust by hand; removes the objects when dry and wipes adhering sawdust from them.

SCLEROSCOPE HARDNESS-TESTER 4-87.910. A term applied to a HARDNESS INSPECTOR when determining the hardness of metal samples by the scleroscope method: places test piece in machine and causes a diamond-pointed hammer to fall on test piece from a definite height; observes the rebound of the hammer by reading a calibrated scale, reading the hardness number directly from the scale at the point of maximum rebound.

SCRAP WHEELER II 9-65.64. A LABORER. Transports heavy metal scrap from shop to yard and from yard to loading platform, using a wheelbarrow or hand truck.

SCREW-CUTTING-LATHE OPERATOR 4-78.011. An ENGINE-LATHE OPERATOR who works with a Lathe (m) equipped with a lead screw for cutting threads.

SCREW DRIVER 9-03.01. A LABORER, PROCESS. Uses a hand or power-driven screw driver to drive down screws in manufactured or other articles, such as automobiles, radios, doors, and machine parts; usually works as a member of a crew or on an assembly line.

SCREW-MACHINE OPERATOR 4-78.021. A TURRET-LATHE OPERATOR who sets up and operates a manually controlled screw machine (a type of lathe) to shape the internal and external cylindrical surfaces of bars or rods of metal to produce screws, bolts, nuts and other parts where threads are usually cut with taps or dies; inserts and adjusts tools in turret to perform desired operations as they are brought into contact with part; clamps part in position and alines it with cutting tools; operates levers and controls, causing machine to perform in sequence the series of operations for which it is set.

SCREW-MACHINE OPERATOR, AUTOMATIC 6-78.145#. A LABORER, PROCESS. Tends one or more screw-making machines in which the action of the turrets and all tools are fully automatic, loading machine magazines with parts, disposing of parts as they are dropped from machines, and stopping and starting machines. Machine is usually set up and adjusted by a SCREW-MACHINE-SET-UP MAN, AUTOMATIC. May be specifically designated according to skill, as automatic-screw-machine operator, first class; automatic-screw-machine operator, second class; and so to any degree. These distinctions are usually local and may be quite arbitrary.

SCREW-MACHINE OPERATOR, SEMI-AUTOMATIC 6-78.144. Shapes internal and external cylindrical surfaces on metal objects that are made from bars or rods of metal (bar stock) with a semiautomatic lathe provided with a turret that can be set up to present each of the tools required for a cycle of machining operations to the work in sequence, and frequently equipped with an automatic bar stock feeding device that keeps machine supplied with metal from which to make a succession of duplicate objects.

SCREW-MACHINE-SET-UP MAN, AUTOMATIC 4-75.160. A JOB SETTER II who sets up tools and adjusts an automatic-screw machine (a type of automatic lathe for making small parts) to make any of the various metal parts for which the machine is adapted. May tend machine in operation.

SEAT-AND-CARPET-INSTALLATION ASSEMBLER 7-03.562**. A SUBASSEMBLY INSALLER II. Installs seats and lays carpets in airplane cabins; cuts cardboard patterns to blueprint specifications and marks cutting lines on carpeting material; cuts along marked lines, using scissors, knife, shears, and electric cutters; binds carpet edges with adhesive or gum, and tacks or cements it to cabin floor; installs seats and other cabin equipment, such as felt seat pads and safety belts, using tacks, glue, cement, and fasteners; inspects seats after they have been upholstered, tightening nuts, bolts, screws, and turnbuckles.

SECRETARY, ADMINISTRATIVE 0-97.03. Executes administrative policies determined by, or in conjunction with, other officials, prepares memoranda outlining and explaining administrative procedure and policy to subordinate supervisory workers; acts as intermediary between minor supervisors and policy-making officials. Makes confidential contacts, keeps special files and performs other responsible duties, varying according to policy of firm or organization. In small organizations, such as trade, civic, or welfare associations, often performs publicity work.

SENSITIVE-FEED DRILL-PRESS OPERATOR 6-78.081. A MULTIPLE-SPINDLE-DRILL-PRESS OPERATOR or a SINGLE-SPINDLE-DRILL-PRESS OPERATOR who uses a drill press (m) in which the tool is fed manually instead of automatically.

SERVICE-AND-FLIGHT INSPECTOR; flight-and-service inspector (aircraft mfg.) An AIRPLANE INSPECTOR II who inspects and tests the operation of commercial, private, and military airplanes, accessories, instruments, and equipment to determine that materials and construction conform to company, military, or commercial airline specifications before releasing for test flight or delivery to purchaser; examines airplanes after flight, repair, or service to determine that airplanes are in satisfactory condition for flying.

SEWER HAND I 6-27.078. Sews by hand certain parts of body and seat upholstery and trim which are not sewed by machine; uses large upholstery needles, heavy thread, and shears.

SEWER, HAND XVI 7-03.010**. Sews the fabric covering to the frames of airplane control surfaces, such as ailerons, elevators and rudders; sews the seams of the fabric previously stretched over the frames by AIRPLANE COVERER, using a special stitch and pulling the thread tight; removes the pins and trims away excess material using scissors.

SEWING-MACHINE OPERATOR 6-27.502. Performs any or all sewing operations on fabrics or similar materials by use of a sewing machine to produce articles, such as garments, upholstery, awnings, or textile bags: places spools of thread and wound bobbins on machine; draws thread under tension spring, through guides into eye of needle; adjusts tension on thread and raises presser foot of machine to admit piece for sewing; lowers presser foot onto material; starts machine and guides material to be sewed under needle. May be specifically designated according to the type of machine operated, as BLIND-STITCH-MACHINE OPERATOR: HEMMER: SEWING-MACHINE OPERATOR DOUBLE NEEDLE: SEWING-MACHINE OPERATOR, MULTIPLE NEEDLE; SEWING-MACHINE OPERATOR, SINGLE NEEDLE; SHELL-STITCH-MACHINE OPERATOR: AND ZIG-ZAG-MACHINE OPERATOR.

SEWING-MACHINE OPERATOR, DOUBLE NEEDLE 6-27.502. A SEWING-MACHINE OPERATOR who operates a special power-sewing machine that sews two parallel rows of stitching simultaneously to do such work as joining pieces of material with double stitched seams.

SEWING-MACHINE OPERATOR, FOUR NEEDLE 6-27.502. A SEWING-MACHINE OPERATOR who operates a special power-sewing machine equipped with four needles that sew four parallel seams simultaneously to form the bone pockets of corsets.

SEWING-MACHINE OPERATOR, MULTIPLE NEEDLE 6-27.502. A SEWING-MACHINE OPERATOR who operates a special power-sewing machine equipped with from five to thirty needles that sew parallel rows of stitches simultaneously.

SEWING-MACHINE OPERATOR, SINGLE NEEDLE 6-27.502. A SEWING-MACHINE OPERATOR who operates a standard type of power-sewing machine, equipped with a single needle, used to join together various pieces of material with single stitched seams.

SHAPER-FORM MAKER 5-17.060. A FORM BUILDER I who makes the patterns or guides used by the operators of various woodworking machines in cutting and shaping parts for wood framework bodies.

SHAPER OPERATOR I 4-78.061. Planes, shapes, or cuts grooves in metal objects with a machine that cuts with a tool held in a reciprocating head (ram): bolts or clamps work on table of machine; selects appropriate cutting tool and bolts it in tool post on machine; moves levers or shifts belts to adjust machine to cut, and feed the tool at appropriate speeds; moves ram of machine slowly by hand or power and sets reversing mechanism to limit ram stroke to travel required; turns handwheel to raise or lower table until work is near cutting tool; starts machine; turns crank on top of tool slide to adjust depth of cut; turns crank or handwheel to feed cutting tool into or across work or engages automatic feed; stops machine and measures work to verify its dimensions; may change position of work on table or change cutting tools as work requires; stops machine when work is completed and removes work from machine. Sometimes specifically designated according to type of machine, as HORIZONTAL-SHAPER OPERATOR: VERTICAL-SHAPER OPERATOR.

SHAPER OPERATOR II 6-33.364. Sets up and operates a machine which cuts grooving, rabbeting, fluting, and various designs or irregular profile in the surface of parts: selects a balanced set of knives which, when assembled, will cut part to specified shape; mounts knives on machine spindle and locks them in place; usually places a guard over the knives; clamps a straight or curved guide to machine table, depending on the longitudinal shape of the product; starts machine, picks up stock, and feeds it to the rotating knives, pressing firmly against guide as it passes the knives; may shape stock by manipulating it against knives without the use of a guide or by passing stock between sets of knives; cleans and lubricates the machine. Usually specifically designated according to type of machine, as DOUBLE-SPINDLE-SHAPER OPERATOR; according to parts worked upon, as SMALL-PARTS-SHAPER OPERATOR; and according to type of tool used, as SQUARE-SHAPER OPERATOR.

SHAPER-OPERATOR HELPER **I 8-78.10. A LABORER, PROCESS. Performs duties as described under HELPER III. e.g. A worker who assists another worker by performing specific or general duties usually of lesser skill, such as keeping a worker supplied with materials, tools, and supplies; cleaning working area, machine and equipment; performing routine machine operations, such as feeding or unloading machine; and assisting worker by holding materials or tools. May be expected to learn the occupation or trade of the worker he assists. Classifications are made according to the type of work involved. Typical classifications for helpers of this type are DRY-CLEANER HELPER (clean., dye., & press.);

MACHINIST HELPER (mach. shop).

SHEAR OPERATOR (aircraft industry) A general term applied to a worker who operates any of the various types of power shears to cut sheet metal. Usually specifically designated according to type of shear operated, such as CIRCLE-SHEAR OPERATOR; LIBERT-SHEAR OPERATOR; ROTARY SHEAR OPERATOR II; UNISHEAR OPERATOR, PORTABLE.

SHEAR OPERATOR, HAND 9-03.01. A LABORER or a LABORER, PROCESS. Cuts metal sheets, rods, angle iron, and strap iron to length by machine; measures lengths on stock, using rule, places stock under shearing blade and sets stop guides; cuts stock by depressing pedal or pulling lever.

SHEAR-PLATE INSTALLER (aircraft mfg.) A SUBASSEMBLY INSTALLER II. Installs removable plates on airplane nacelle to provide access to interior for making repairs and adjustments: positions plates over access holes to determine that fit is accurate, removes, and files plates if necessary to obtain desired dimensions; applies a friction reducing paste to plate edges with a small paddle; fits plates in position, bolts them to preinstalled nut plates and tightens bolts with a hand wrench; removes any bolt stripped in tightening process, enlarges hole with an electric hand drill, and taps nut with a thread cutting tool to accommodate a larger bolt. Workers may be specifically designated according to degree of proficiency acquired, as shear-plate installer, class a; shear-plate installer class b; shear-plate installer, class c.

SHEARMAN, HEAD 5-92.411**. A FOREMAN. Directs the operations of a sheet-metal shearing department: decides procedures to be followed; maintains adequate supply of sheet metal, ordering and storing supplies until needed; requisitions new equipment; coordinates activities of his department with other departments.

SHEET-METAL ASSEMBLER 7-03.562**. A SUBASSEMBLY INSTALLER II. Installs prefabricated sheet-metal sections of streamlining (fillets, cowls, and fairings) on airplanes: fits the streamlining in place, trimming off excess metal with metal snips and files; finishes shaping parts as necessary, using composition mallets; drills holes in fuselages and in fillets, cowls, and fairings, using a portable electric drill; bolts or clamps parts to fuselages.

SHEET-METAL ASSEMBLER II (aircraft mfg.) bench mechanic. A SUBASSEMBLER III. A FITTING MAN who assembles doors, turrets, pilot enclosures, fuselage sections, fairing, or various sheet metal parts and minor assemblies. May reshape parts with common metal-working machines in order to obtain more accurate fit. May assemble small parts at a bench. Workers may be specifically designated according to degree of proficiency acquired, as sheet-metal assembler, class a; sheet-metal assembler, class b; sheet-metal assembler, class c.

SHEET-METAL BUNDLER 7-88.730**. Stacks specified number of metal sheets in bundles, and weighs and records weight of each bundle on attached tags; selects sheet metal from stock according to the order specifications; determines kind and gage of metal by visual inspection and stamps such data on unmarked sheets; loads bundles on hand trucks for transportation to designated departments or signals crane operator to move bundles.

SHEET-METAL-CULLS-RACKER 9-65.43**. A LABORER. Sorts sheet metal left after shearing operations (culls) according to thickness of metal; transports sheet metal to racks, using a hand truck, and stores the culls according to thickness.

SHEET-METAL-FABRICATING-MACHINE OPERATOR 6-94.202. Operates a number of machines used in the fabrication of sheet-metal articles or equipment, performing duties, such as bending premarked sheets into various shapes, cutting specified sizes of sheet metal, cutting circular or curved sheet-metal blanks, and forming sheet-metal into tubular or uniformly curved shapes. Does not perform lay-out work, or installation work, as opposed to SHEET-METAL WORKER.

SHEET-METAL FORMER 4-80.050*. A SHEET-METAL WORKER, AIRCRAFT I who forms and bends sheet metal to shape parts of fittings or structural members of aircraft; working from blueprints and using a rule and dividers, outlines on an undeveloped (flat) part the lines along which the metal is to be cut; shapes cut piece to specified dimensions by hammering it over a forming block using mallets of wood, rubber, or rawhide; trims metal edges with hand snips and files off ragged edges and burrs; bolts and rivets parts together; inspects assembled unit after heat-treating and corrects any distortions, checking finished unit with micrometers, squares, rules, and other measuring instruments. Workers may be designated according to degree of proficiency acquired, as sheet-metal former, first class; sheet-metal former, second class.

SHEET-METAL INSPECTOR I 5-03.820**. Inspects sheet-metal airplane parts, such as ailerons, rudders, and wings for proper forming and assembly: tests hardness of metal, using standard hardness-testing devices: visually examines rivets and welds, and tests welds with feeler gages; inspects skin for bumps and weak spots; verifies dimensions of parts in an acceptance jig; and using precision measuring devices such as calipers and micrometers. Sometimes specifically designated according to a stage in the fabrication process, as sheet-metal inspector, assembly; sheet-metal inspector, detail.

SHEET-METAL INSPECTOR II 6-78.676**. Inspects sheet-metal aircraft parts, such as ribs, fairings, cowls, and channels (U-shaped parts): determines that the contour, size and location of bolt and rivet holes is correct, using templates and acceptance jigs; verifies gage of metal against blueprints to ascertain that the parts meet specifications; examines surfaces for dents, scratches, and other surface defects; fills out rejection tags.

SHEET-METAL LAY-OUT MAN I; pattern cutter; sheet-metal-pattern developer (sheet metal) 4-80,020. Draws and develops exact patterns and forms on sheet metal according to designs specified on blueprints, using scale, compass, dividers, and other lay-out tools; marks holes and lines with prick punch; indicates bends, cuts, and other operations by marking the metal accordingly.

SHEET-METAL LAY-OUT MAN II 6-94.222*. Marks the cutting and forming lines on sheet metal in accordance with templates: positions and secures template to sheet metal by inserting guide pins in the previously drilled holes of the template and sheet metal and draws a line around the perimeter of the template with a scriber; positions templates on undrilled sheet metal, marking the cutting and forming lines so that maximum number of parts can be made from one sheet; lays out simple work according to blueprints, using instruments, such as steel rule and scriber.

SHEET-METAL OILER 9-03.01. A LABORER, PROCESS. Applies oil or grease to sheet metal blanks with brush or swab prior to stamping or drawing operations, to help the metal slip into place between the dies.

SHEET-METAL ROLLING MACHINE OPERATOR 9-03.01. A LABORER, PROCESS. Feeds sheet-metal stock, prior to stamping and drawing operations, through oil-soaked felt rollers to clean and lubricate the stock and to facilitate action of drawing and stamping dies on the stock.

SHEET-METAL WORKER II 4-80.010. Fabricates, assembles, alters, repairs, and installs sheet-metal articles and equipment: cuts metal with hand shears, rotary shears, square shears, shapes metal with brake, forming machine; punches or drills, holes for rivets, bolts, and screws with center punch and hammer, or hand drill; assembles sheet-metal parts, brackets, and hangers; bolts, rivets, or fits them into units for erection; makes attachments, seams, and joints by welding, riveting, bolting, soldering, nailing, or by fastening with metal ties and wood screws; grinds or files seams, joints, or rough surfaces, with grinding wheel or file. May mark lay-out on sheet metal according to blueprints or specifications.

SHEET-METAL WORKER, AIRCRAFT I 4-80.050*. Cuts and forms sheet metal used in the assembly of aircraft parts, fittings, and structural members, using hand tools and sheet-metal working machines. Specifically designated according to the operation performed, as SHEET-METAL FORMER.

SHEET-METAL WORKER, AIRCRAFT II 4-80.060*. Fabricates, assembles, alters, repairs, and installs all aircraft sheet metals, such as aluminum, duraluminum, steel, tin, brass, zinc, or galvanized iron; lays out metal parts according to blueprint specifications and fabricates parts using sheet metal shop equipment including punches, drills, and metal saws; welds, brazes, or solders parts together; performs necessary heat-treating operations; anneals metal parts as required.

SHEET-METAL-WORKER APPRENTICE 7-97.040. Performs duties as described under APPRENTICE I.

SHEET-METAL-WORKER HELPER 6-94.201. Performs duties as described under HELPER III.

SHEET-METAL WORKER HELPER, AIRCRAFT 6-94.231*. Performs duties as described under HELPER III.

SHEET-STEEL INSPECTOR 7-02.746. Inspects each sheet of steel for cracks, bumps, and dents before sending ditto stamping machine; marks imperfect spots and returns sheet for recutting: keeps a record of number of good and imperfect sheets.

SHELL FITTER 7-03.552**. A SUBASSEMBLER II. Fits and clamps previously formed airplane fuel-tank shells to frames preparatory to riveting operations; marks places on tank skeletons where rivet holes are to be drilled; clamps shells to skeletons with C-clamps; alines the rivet holes in the shells in accordance with the markings on the frame, bending the shells by hand as necessary; drills holes in the skeletons to correspond with the predrilled rivet holes in the shells and fastens the parts together with nuts and bolts.

SHIELD ASSEMBLER (aircraft mfg.) A DETAIL ELECTRICAL ASSEMBLER who assembles, connects wiring and tests junction boxes: puts together structural parts of metal junction boxes (shields) guided by blueprints; perforates bolt or rivet holes using an electric hand drill or drill press, and connects members by bolting or riveting, using a pneumatic riveting tool or hammer; connects and tests wiring, using testing apparatus. May be specifically designated according to degree of proficiency acquired, as shield installer, class a; shield installer, class b; shield installer, class c.

SHIELD-AND-CONDUIT INSTALLER (aircraft mfg.) A SUBASSEMBLY INSTALLER II. Installs on partially completed airplanes, electric conduits, ref. ELECTRIC-CONDUIT INSTALLER, preassembled junction boxes, ref. SHIELD INSTALLER, and light fixtures. Does not install wiring. May be specifically designated according to degree of proficiency attained, as shield-and-conduit installer, class a; shield-and-conduit installer, class b; shield-and-conduit installer, class c.

SHIELD INSTALLER (aircraft mfg.) Installs preassembled electrical junction boxes (shields) on airplane light fixtures, connects wires to terminals, and tests wiring: bolts or screws shields to fixtures, using hand tools; wires shields by threading wires through conduits and around fixtures, taping or otherwise joining groups of wires, cutting wires to proper length, and connecting them by soldering ends to shield terminals or by inserting insulation and patented terminals around ends and screwing terminals to shields; tests wiring using special testing devices.

SHIELDING INSTALLER (aircraft mfg.) A SUBASSEMBLY INSTALLER II. Installs preformed units of steel shielding around aircraft motor to provide an insulation against its heat; locates shielding, supporting brackets and pulley brackets, using common measuring tools and jigs; drills or punches installation holes, using an electric hand drill or hand punch and bolts; shielding in place, using hand tools; reworks shielding as necessary to compensate for airplane structural variations, using snips, files and other hand tools. Checks completed assembly to assure conformance to blueprint specifications. Worker may be specifically designated according to degree of proficiency acquired, as shielding installer, class a; shielding installer, class b; shielding installer, class c.

SHIPPING CHECKER 1-34.15. Insures the completeness and correctness of outgoing shipments by examining such details as the quantity, quality, labeling, and addressing of the items of merchandise and comparing with customer's order or other records. May check incoming merchandise.

SHIPPING CHECKER II 1-34.17**. Determines that airplanes ready for shipping are fully equipped and prepares shipment of spare parts; inspects accessories and equipment in the airplane, comparing installations with specification lists to ascertain that nothing has been omitted; selects spare parts from storage bins for shipment; routes parts for packing and crating; loads packed parts in airplanes for delivery.

SHIPPING CLERK I 1-34.13. Directs and participates in the assembling and shipping of merchandise or material to customers, branch stores, manufacturers, or others, and the keeping of records pertaining to shipments made: works in an establishment where the large number of shipments, size of orders, varied methods of shipping (parcel post, freight, truck) and other factors require considerable knowledge of shipping procedures, practices, routes, available means of transportation, and rates; usually supervises several assistants who select, pack, wrap, and crate the goods, weigh and address the parcel and crate, attach postage or bill of lading to goods, and load it in cars or trucks; keeps records of the goods shipped, makes up bills of lading and shows routes to be followed, posts weight and shipping charges, and keeps a file of shipping records.

SHIPPING CLERK (III) (aircraft mfg.) Prepares clerical records for shipping airplanes and spare parts, flown direct from factory: sorts copies of approved shipping records for delivery to other departments; files copies of shipping data in master file, ref.FILE CLERK III; prepares duplicate copies of shipping records as directed, ref. DUPLICATING-MACHINE OPERATOR IV; counts spare parts to be shipped with the airplanes flown from factory to insure completeness of orders; takes spare parts from storage and forwards them to other workers for crating; keeps a record of the number of crates, amount, kind, and weight of crated equipment for the preparation of bills-of-lading.

SHIPPING INSPECTOR I 4-78.671**. An INSPECTOR who examines castings, mechanical units, cable assemblies, rivets, bolts and other spare airplane parts by sight and with precision measuring devices, such as micrometers, gages, and scales, to determine that parts are perfect before shipping.

SHIPPING INSPECTOR II 7-59.433**. An UPHOLSTERY-AND-TRIM INSPECTOR who inspects airplanes before shipment to determine that the fabric accessories, such as seats, safety belts, and engine covers, are completely installed.

SHOP CLERK 1-05.01. A CLERK, GENERAL OFFICE who works in a small production shop or in a production department of a manufacturing establishment, performing miscellaneous clerical duties, such as keeping a record of workmen's time and rate of production, taking phone orders for material or products, making out shop orders for materials, keeping an inventory of stock on hand, calculating processing costs, and making up pay rolls and pay checks.

SHOP CLERK, CHIEF (clerical). Performs duties as described under SUPERVISOR III.

SHRINKING-MACHINE OPERATOR II 6-94.223*. Compresses the edges of partially formed sheet-metal parts in a sheet-metal shrinker (m) according to specifications: adjusts space between dies of machine to accommodate gage of metal by turning a hand wheel; wipes surfaces of parts with lacquer thinner to remove dirt, grit, grease, and other foreign substances; starts machine and grasps sheet-metal part with both hands and guides it between dies that grip and exert pressure on the metal, shaping the metal to the desired conformation; checks part with template and repeats operation if necessary.

SHROUDMAN II (aircraft mfg.) shroud assembler. A DETAIL ASSEMBLER II. Assembles sheet metal guard (shroud) which fits over airplane exhaust to protect fuselage from excessive heat: fits prefabricated parts in a jig; drills necessary holes for rivets and bolts; marks positions of welds; bolts parts temporarily together.

SIDE-FRAME BUILDER 5-03.554**. A SUBASSEMBLER III. A SKELETON ASSEMBLER I who assembles the steel side frames of airplane fuselages.

SINGLE-SPINDLE DRILL PRESS OPERATOR 6-78.083. Performs such operations as drilling, countersinking, reaming, and sometimes tapping, on metal objects with a drill press (m); fastens drill, reamer, or tap in machine, alines work on table of machine, and starts machine; pulls hand lever to feed tools, to work or engage automatic feed; withdraws tool from work and stops machine. Sometimes specifically designated according to type of machine, as DRILLING-AND-TAPPING-MACHINE OPERATOR; HIGH-SPEED-FRICTION-PRESS OPERATOR; VERTICAL-DRILL-PRESS OPERATOR; VERTICAL-DRILL-PRESS OPERATOR, AUTOMATIC FEED.

SKELETON ASSEMBLER I 5-03.554**. A SUBASSEMBLER III. Fits together in a jig various adjoining structural members of airplane fuselages, tails, or wings and drills holes in the parts for subsequent riveting; reams and counter sinks drilled holes by hand or with a powered tool; marks location of rivet holes in undrilled parts either by positioning a template over the part and counter-punching the indicated positions, or by referring to blueprints and locating the holes with a rule and divider; files parts to improve the junction of pieces when necessary. May specialize in the assembling of one part or unit, as FUSELAGE-FRAME BUILDER; WING-FRAME BUILDER.

SKELETON ASSEMBLER II 7-03.542**. A DETAIL ASSEMBLER I. Assembles and rivets together airplane fuel-tank baffle plates to form the tank skeletons that supports the tank shell; fits together and fastens in place with spring fasteners a specified number of baffle plates to form the skeleton, using a special tool; rivets baffle plates to form the skeleton, using a special tool; rivets baffle plates together aided by another worker who bucks-up the rivets; drills rivet holes as necessary with a portable electric drill.

SKELETON-ASSEMBLER HELPER 9-03.01**. A LABORER, PROCESS. Performs duties as described under HELPER III.

SKIN MAN 5-03.552**. A MAJOR ASSEMBLER. Fits sheet-metal coverings to fuselage bulkheads and other sections of aircraft and fastens them temporarily in position with self-tapping screws or "C" clamps; trims edges of preformed sheets using a rasp to procure a proper fit; drills rivet holes through sheets and flanges of bulkheads using an electric drill; repairs metal areas that have been damaged by cutting away defective part with snips and riveting on a patch that fits flush with the adjoining skin. May make new parts of airfoil surfaces, cutting, bending, and trimming them to shape before new jigs and fixtures have been set up. Usually specifically designated according to the degree of proficiency acquired, as skin man, first class; skin man, second class.

SMALL-PARTS ASSEMBLER III 7-03.552**. A SUBASSEMBLER II. Puts together the component parts of small airplane assemblies such as fins, stabilizers, ailerons, rudders, and elevators; examines parts for flaws; places all structural members, such as spars, ribs, and braces, in their proper position in a jig; slides skin (shaped sheet-metal covering) over the skeleton, and clamps the entire structure in the jig; alines rivet holes and inserts self-threading screws into specified holes to hold the assembly together preparatory to final riveting. May enlarge rivet holes to required size with an electric hand-drill and place rivets in the holes.

SMALL PARTS ASSEMBLER, IV 5-03.554**. Joins accessories to airplane parts and equipment preliminary to installation on airplanes: installs pipe fittings on fuel and lubrication lines; attaches instruments to panels and makes the necessary electric and hydraulic connections, using tools, such as drills, pliers and screw drivers; assembles and installs electric switches; performs other miscellaneous duties, such as bending tubing by hand and taping wires incidental to the installation of small parts.

SNIPPER, SHEET METAL 9-03.01. A LABORER, PROCESS. Cuts small sheet-metal parts, or trims excess wire from wired edges, using heavy hand shears (snips).

SOFT-TUBING BENDER (aircraft mfg.) A TUBE-BENDING-MACHINE OPERATOR I who bends aircraft tubing made of soft aluminum alloys.

SOLDERER I 6-95.001. Joins metal parts together by melting and applying solder (low-melting metal alloy): (1) in applying solder along the edges of the surfaces to be joined, cleans surfaces by filing, grinding, or buffing, or with a cleaning compound; spreads chemical flux on surfaces, the action of which removes oxide which prevents the solder from adhering to the metal; applies hot soldering-iron to joint and feeds solder against iron, causing it to melt and run along joint; spreads solder along joint to form a smooth even surface; (2) in applying solder between surfaces with flux, alines parts in proper position and heats surfaces with torch or burner; runs solder stick or wire along edge of joint until sufficient amount has melted; heats surfaces until solder works (sweats) into joints.

SOLDERER, SMALL PARTS 6-95.001. A SOLDERER I who performs routine soldering operations, such as assembling small sheet-metal parts, or electrical wiring and terminals.

SORTER 9-65.43. A LABORER. Sorts bundles, boxes, or loose lots of articles for delivery: either reads delivery or route numbers marked on articles or delivery slips by ROUTER III or determines from memory or from charts the locations of addresses indicated on delivery slips; places articles in bins designated according to route of driver, or stacks them in separate piles.

SOUNDPROOFING CUTTER 7-03.550**. Prepares soundproofing and insulating materials for installation in airplanes and covering of airplane parts; determines from specifications the type and quantity of material necessary to produce the desired insulation; marks material according to template or blueprint using a crayon pencil or a scratch awl; cuts material along markings with a scissors or electric cutter. Assembles insulation material, by placing it between covering sheets, preparatory to sewing; cements, tapes, or wires felt and asbestos insulation on air ducts, steam pipes, and similar parts as required.

SOUNDPROOFING-INSTALLATION ASSEMBLER 7-03.562**. A SUBASSEMBLY INSTALLER II. Cements soundproofing and insulating materials to the inner walls of airplane cabins: fits standard-size sheets of insulating material in place, trimming away excess to secure a flush fit; brushes cement on back of sheets and presses them in place by hand.

SPAR BUILDER I 7-03.552**. A SUBASSEMBLER II. Assembles the members of an airplane wing spar in a jig and temporarily secures them with respect to each other with screws or tack welds prior to final assembly riveting or welding operations.

SPAR BUILDER II 6-33.925**. An AIRPLANE WOODWORKER II who assembles wooden airplane structural members (spars) from prefabricated parts.

SPAR-CAP-MILL OPERATOR 4-78.031**. A MILLING-MACHINE OPERATOR II who sets up and operates a milling machine to mill out spar caps (top sections of airplane structural members).

SPAR-CAP SANDER; spar-cap finisher (aircraft mfg.) A POLISHER II who sands small metal aircraft fittings installed on the ends of spars; finishes part with sandpaper; inspects sanded spar caps using micrometers and straightedges. Frequently works within tolerances of .001 inch.

SPAR FINISHER 6-33.925**. An AIRPLANE WOODWORKER II who specializes in smoothing the surfaces of partially finished spars and attaching the fittings.

SPARK-PLUG TESTER (aircraft mfg.) Tests new spark plugs by firing them under specified pressure of nitrogen to determine whether they meet specifications and overhauls defective and used spa rk plugs: removes new spark plugs from wrappings and positions them in chamber of special testing machine, adjusting pressure-regulator of gas cylinder for appli cation of specified pressure; connects spark plug terminal to magneto wire that generates current and pulls lever which supplies nitrogen gas under pressure and a continuous spark current to spark plug; observes gage attached to gas chamber to insure adequate pressure is supplied for test; observes sparks to determine whether they jump continuously from four outside electrodes to center electrode, indicating that spark plug is satisfactory; releases lever and removes spark plug from testing machine; repacks satisfactory spark plugs in original container and sets aside defective ones for overhauling; disassembles defective and used spark plugs; sands and polishes electrodes and mica insulation, using a power-operated abrasive wheel and special polishing cloths; cleans various parts by washing in gasoline, using brushes or cloth-covered wooden rod; removes hard carbon from spark plug shells with knife or wire brush, setting aside defective shells from new spark plugs for return to manufacturer; reassembles spark plugs, using special hand tools; keeps record of work performed.

SPECIAL - ASSIGNMENTS INSPECTOR (aircraft mfg.). An AERONAUTICAL ENGINEER. Conducts studies of inspection methods, plant equipment, and manufacturing processes of an aircraft plant to increase efficiency of inspection operations and reduce the cost of production operations; analyses reports based on tests, investigations, and studies made in the plant, engineer using principles and his knowledge of airplane manufacturing processes to facilitate the analysis; prepares reports of findings, recommending methods for increasing efficiency of inspections and for reducing production costs. May design special testing equipment.

SPECIFICATION WRITER, ENGINEERING 0-68.61. Interprets DRAFTSMAN'S drawings to builders by an itemized list of construction specifications: phrases specifications according to legal form; indicates extent of work to be done in each trade.

SPINNER IV 4-94.201. Operates a lathe (m) on which shaped articles are spun from sheet metal stock: measures, marks, and cuts disks from sheet-metal stock, and drills a hole in each disk, using marking devices, shear (m), and drill press (m), or lays out disks to be sheared and drilled by forcing the follow block against the disk with tailstock; starts machine; coats outside of rotating disks with beeswax; manipulates a form tool, by hand, against the disk, forcing it to the shape of the spinning form; smooths and trims spun piece with hand tools; removes completed part from machine.

SPOOLING-MACHINE OPERATOR 7-00.225. Prepares spools of wire and insulating material for insulating and wrapping machines by placing empty spool in a winding lathe and winding on requisite amount of wire or material from a large supply spool.

SPRAY-BOOTH CLEANER 9-65.47. A LABORER. Removes deposits of paint, resulting from mist given off by spray guns, from inside surfaces of spray booths; scrubs walls, ceilings, and floors with hand brushes soaked in lacquer thinner, gasoline, or other solvent; covers cleaned walls with a soapy compound that makes future cleaning easier by preventing paint from adhering to walls.

SPRAY MAN I 7-16.210. A PAINTER, SPRAY I who paints wooden and metal airplanes and airplane parts, such as tails, wheels and wings, with color coats, corrosion resistant paint, and varnish. Does not spray fabric covered airplanes with dope.

SPRAY MAN II 5-16.930**. Sprays aluminum dope on fabric covered airplane parts using a spray gun: sets up parts in jigs; sprays surface evenly so that the tightening process will be equalized and the color will not be streaked when dry.

SPRAYER HELPER IV 9-03.01*. A LABORER, PROCESS. positions small parts and articles on a rack, tray, or rotating stand for painting by PAINTER, SPRAY I; washes parts to be painted with a thinner soaked rag to remove grease, oil, and dirt.

SPRING-TENSION-FEED-HACKSAWING-MACHINE OPERATOR 8-78.1^{0}. A LABORER, PROCESS. A HACKSAWING-MACHINE OPERATOR who saws metal stock to length on a machine in which the blade is fed through the metal by the tension of a coil spring acting on the frame in which the blade is mounted.

SQUARE-SHEAR OPERATOR 6-88.664. A POWER-SHEAR OPERATOR I who sets up and operates a shearing machine to square cut measured lengths from strips of sheet-metal.

STABILIZER ASSEMBLER 6-33.925**. An AIRPLANE WOODWORKER II who assembles parts of the tail structures of airplanes from prefabricated wooden parts.

STARTING-AND-RETRACTING-MOTOR TESTER; retracting-and-starting-motor tester (aircraft mfg.) An ELECTRIC-MOTOR REPAIRMAN who tests and repairs aircraft starting motors and retracting motors; inspects and tests motors to determine cause of defective operations, ref. ELECTRIC-MOTOR ANALYST; records test results on special forms.

STATIONARY ENGINEER 5-72.010. Operates and maintains stationary engines and mechanical equipment, such as steam engines, air compressors, generators, motors, turbines, ventilating and refrigerating equipment, steam boilers, and boiler-feed-water pumps; observes meters and gages to determine operating condition of equipment, and makes adjustments for minor repairs necessary to insure efficient performance; keeps clerical records, such as temperature of equipment and hours of operation, fuel consumed, and temperature and analysis of flue gases. In most states and municipalities, licenses (first, second, or third class) are required for boiler attendance and for the operation of the various engines and machines, the worker being restricted to the operation of types and sizes of equipment authorized by the license possessed. In many localities, such a license is required to fire a boiler to heat a building, or to supply steam for steam-consuming equipment. May oil or lubricate machines, or may supervise OILERS II who do this. May supervise MAINTENANCE MEN, BUILDING. If worker also keeps machines and mechanical equipment throughout plant in repair, or supervises their repairing, he should be classified as a MAINTENANCE ENGINEER I.

STEELSCOPE OPERATOR 6-78.674**. A MAGNETIC INSPECTOR who tests metal airplane parts for defects, using a method known by the trade name of Steelscope.

STEEL-TUBING BENDER (aircraft mfg.) Bends steel aircraft tubing in a tube bending jig: anchors aircraft tubing in a tube bending jig: anchors jig in a vise; heats tubing with an acetylene torch; places heated tubing in the jig and tightens holding clamps; draws tubing tight in jig by clamping a pipe sleeve over the end and pulling on it; verifies contours of finished tubing in an acceptance jig.

STEEL-TUBING HELPER (aircraft mfg.) A LABORER, PROCESS. A TUBE-BENDER HELPER who assists STEEL-TUBING BENDER in the fabrication of steel airplane tubing.

STENCIL CUTTER III 9-65.43*. A LABORER. Cuts out stencils used for painting airplane insignia, signs, and other purposes; traces outline of a template with a pencil onto a special paper that is usually gummed; cuts around penciled outlines with a sharp-pointed knife to form the stencil.

STENCIL CUTTER, HAND 9-65.43. A LABORER. Cuts stencils to be used in marking brand names, shipping instructions, lot numbers, or other information on articles or containers, following written or verbal instructions; selects punch-like die that has the proper character mounted on one end; holds die in position on stencil blank, strikes die with hammer, cutting out the character; similarly cuts out other characters; may mark with stencils.

STENOGRAPHER 1-37.12. Takes dictation in shorthand of correspondence, reports, and other matter and transcribes dictated material, writing it out in long hand or using a typewriter. May be required to be versed in the technical language and terms used in a particular profession. May perform a variety of related clerical duties. May take dictation on a stenotype machine or may transcribe information from a sound producing record.

STICKER OPERATOR (aircraft mfg.) Operates a sticker (a machine that planes or cuts grooves in fibre, wood, or metal) by pushing the various kinds of material between feed rollers which force it into the machine. Checks accuracy of work with precision instruments such as micrometers, calipers, or steel square, often to a tolerance of 0.0005 inches; removes irregularities by hand with a scraper or file.

STOCK BOY 9-65.43. Replenishes depleted stock or materials in the operating departments of a manufacturing plant, department store, or other establishment, either carrying the stock or materials or pushing them on a hand truck or rack from the supply room.

STOCK CLERK II 1-38.01. Receives, stores, and issues equipment, material, merchandise, or tools in a stockroom or storeroom: checks incoming orders against items as listed on requisitions or invoices, counting, grading, or weighing the articles.

STRAIGHTENER AND PARTS-FITTER 5-03.560**. Straightens the steel tubing of warped airplane fuselage frames; locates warps and bends in tubing by sighting along the frame; heats warped portions of frame with an acetylene torch; hammers the metal into shape using a wooden mallet; verifies contours and straight parts of frame using straight-edges and protractors; fits and clamps small steel parts to airplane fuselages.

STRAIGHTENER, HAND (any ind.) 6-88.613. Straightens small, bent or warped metal objects, such as small bars, shafts, and housings by means of a hand-powered press. ref. STRAIGHTENING-PRESS OPERATOR.

STRESS ANALYST, AIRCRAFT (aircraft mfg.) An AERONAUTICAL ENGINEER. Controls and measures extent of mechanically induced stresses on airplane assemblies, such as wings, fuselage, landing gear, and controls, simulating flying conditions by manipulating test devices and gages.

STRETCH-FORMER OPERATOR; sheet-metal-stretcher operator; stretch-press operator (aircraft mfg.) A FORMING PRESS OPERATOR II who shapes sheet-metal airplane parts, such as rudders and cowlings on a press equipped with a device which holds the sheet-metal blank taut while the movable dies press it.

STRETCH-FORMER-OPERATOR HELPER (aircraft mfg.) A LABORER, PROCESS. Performs duties of lesser skill to assist in the shaping of airplane parts on a stretching press: secures sheet metal blanks from storage; tightens and loosens set screws to stretch the blanks in place; piles formed parts for removal.

STRETCHING-PRESS OPERATOR 6-88.627**. A FORMING-PRESS OPERATOR I who stretches sheet metal over wooden dies to form airplane structural units; hammers edges of parts to secure desired shape, using mallets.

STRIPPER 9-03.01*. A LABORER, PROCESS. Removes temporary protective coating (lionoil) from surfaces of airplane wings, fuselages, and other metal parts; sprays a caustic soda solution onto the metal surfaces with a spray gun to loosen the lionoil; washes off the solution and lionoil with water; drys the sprayed parts with rags to produce clean, polished metal surfaces.

STRIPER IV (aircraft mfg.) A LABORER, PROCESS. Paints identifying color stripes on airplane conduits: determines color to be used by reading number on shop order and referring to color code chart; selects lacquer of prescribed color from rack; brushes narrow strip near end of tubing.

STRIPER, HAND I 7-16.610#. Touches up edges of doors, cowl, hood, and fenders by hand, using small brushes and paint: touches up striping to cover scratches and bare spots, using specially designed brush (sword brush) that forms stripes of varying widths according to pressure exerted; inspects entire paint job.

STRIPER, MACHINE 7-16.580. Paints decorative stripes on automobile bodies, wheels, and hoods, using various types of devices which mechanically aid the guiding of the line of striping, as opposed to Striper, Hand, who uses only a brush; fills gun on reservoir with paint; adjusts guide so that molding will guide gun; opens valve with finger to start paint feeding by gravity and moves gun along, forming stripe; wipes off end of stripe with cloth; touches up stripe with hand brush. Wheels may be striped by revolving them on a spindle and forming concentric stripes with a stationary brush. Worker may use templates where no molding or other guide exists.

SUBASSEMBLER II 7-03.552**. A classification title for jobs involving the joining of detail assemblies, to form airplane structural parts and equipment, such as elevators, bulkheads, spars, doors, and fuel tanks. BULKHEAD MAN, CLEAN UP MAN VII; DOORFRAME ASSEMBLER II; ELEVATOR ASSEMBLER; FLAP ASSEMBLER; REAR DECK ASSEMBLER; RUDDER ASSEMBLER; SHELL FITTER; SMALL PARTS ASSEMBLER III; SPAR BUILDER I; TAB ASSEMBLER; TAIL-SURFACE-FRAME BUILDER; TANK BUILDER II; WING TIP ASSEMBLER.

SUBASSEMBLER III 5-03.554**. A classification title for jobs involving the assembly of airplane sub-units, such as instrument panels, control pedestals, engine cowlings and landing gears. Classified under this title are the following jobs: AIR-MAZE ASSEMBLER; BENCH ASSEMBLYMAN; COWLING INSTALLATION ASSEMBLER; FITTING MAN; FUSELAGE-FRAME BUILDER; INSTRUMENT-PANEL ASSEMBLER; LANDING-GEAR ASSEMBLER; SIDE-FRAME BUILDER; SKELETON ASSEMBLER I; SMALL-PARTS ASSEMBLER IV; TRUSS ASSEMBLER; WING-FRAME BUILDER.

SUBASSEMBLY INSTALLER I 5-03.562**. A classification title for jobs involving the installation in partially completed airplanes of sub-assemblies, such as heating and ventilating equipment, propellers, and radio equipment. Classified under this title are the following jobs: HEATING-AND-VENTILATING-INSTALLATION ASSEMBLER; INSTALLATION MECHANIC; PLUMBER, AIRCRAFT, PROPELLER INSTALLATION ASSEMBLER.

SUBASSEMBLY INSTALLER II 7-03.562**. A classification title for jobs involving the installation on an airplane of parts and equipment, such as electric conduits, soundproofing, seats, and carpets. Classified under this title are the following jobs: ASSEMBLYMAN IX; COCKPIT-COWL-TRIM MAN; ELECTRIC-CONDUIT INSTALLER; FINAL ASSEMBLER IV; FITTER XV; GENERAL-AIRCRAFT ASSEMBLER III; SEAT-AND-CARPET INSTALLATION ASSEMBLER; SHEET-METAL ASSEMBLER; SOUNDPROOFING INSTALLATION ASSEMBLER; TRIMMER I.

SUPERCHARGER-COWLING INSTALLER (aircraft mfg.) A SUBASSEMBLY INSTALLER II. A SHEET-METAL ASSEMBLER I who installs on airplane wings cowling for superchargers and exhaust stacks, and streamlining sections, such as fillets and blisters.

SUPERCHARGER-REGULATOR ASSEMBLER (aircraft mfg.). A DETAIL ASSEMBLER I. Puts together at a bench the component parts of aircraft supercharger regulators: assembles various parts, such as syphons, rods, gaskets, and plates, using screwdrivers, wrenches, and pliers and sealing specified joints by applying adhesive with fingers; cleans parts as necessary by dipping them into chemical solution.

SURFACE-GRINDER OPERATOR I 4-78.513. Grinds plane surfaces or grooves in plane surfaces with a machine that finishes metal with an accurately controlled abrasive wheel: selects abrasive wheel of appropriate size, shape, and abrasive quality and fastens it on spindle of machine; fastens work on table of machine with vise jaws or other fixture or by energizing an electro-magnet built into or bolted to the table; adjusts speed of rotation of abrasive wheel into contact with work; observes operation of machine; stops machine and measures work; removes work from machine when it is completed. May dress or true the abrasive wheel by feeding it against a diamond.

SURFACE-GRINDER OPERATOR II 6-78.522**. Finishes flat metal surfaces, or grooves in flat metal surfaces, on a surface-grinding machine, performing simple repetitive precision grinding operations, as contrasted to the SURFACE-GRINDER OPERATOR I who frequently performs a variety of complicated grinding operations, using the same machine: fastens workpiece on table by energizing magnetic chuck; feedsabrasive wheel into work by turning handwheel or by using automatic feed device, or, where automatic machines are used, observes automatic operations of machine frequently tending several machines; removes work when completed; gages cut, using micrometers, calipers, and verniers. May make simple set-ups, although, frequently this is done by another worker, usually a JOB-SETTER II.

SURFACE-GRINDER-OPERATOR HELPER**. 8-78.10. A LABORER, PROCESS. A worker who assists another worker by performing specific or general duties usually of lesser skill, such as keeping a worker supplied with materials, tools, and supplies; cleaning working area, machine and equipment; performing routine machine operations, such as feeding or unloading machine; and assisting worker by holding materials or tools. May be expected to learn the occupation or trade of the worker he assists. Classifications are made according to the type of work involved. Typical classifications for helpers of this type are DRY-CLEANER HELPER (Clean., dye., & press): MACHINIST HELPER (mach. shop).

SWAGING-MACHINE OPERATOR II 6-86.120. A FORGING-PRESS OPERATOR who tapers and reduces the ends of metal bars, rods, and tubing, on a power press (m) equipped with tapering dies.

SWINGING-CUT-OFF-SAW OPERATOR 6-33.214. Operates a swinging circular cut-off saw (m) to cut lumber to desired lengths: adjusts end stops to length of stock desired; starts machine; lays lumber on machine table against back and end stops, holding it firmly to table; pulls saw across piece, allowing saw to swing back to idling position when cut is complete; removes cut length from table; slides remainder along table to end stop to cut as desired.

SWISS-JIG-BORING-MACHINE OPERATOR 4-78.043. Uses a precision boring machine to make holes with extreme accuracy in such objects as boring jigs; clamps work to be bored on table of machine; places center punching tool or center drill in chuck on spindle of machine; turns handwheels and reads calibrated dials on handwheel shafts to locate center-marking punch or drill accurately over points on work where holes are to be drilled; lowers spindle by turning handwheel to mark locations for hole centers; replaces center marking tool in chuck with drill of appropriate size; starts machine; positions drill over center mark; turns handwheel or engages automatic feed to drill holes; replaces drill in chuck with boring tool or end cutting reamer; positions boring tool or reamer over drilled hole; feeds tool or reamer through hole to cut it very accurately to size. May be specifically designated according to make of machine, as SWISS-JIG-BORING-MACHINE OPERATOR.

SWITCHBOARD OPERATOR II 4-87.410. Manipulates switches to control operation of electrically heated furnaces, reading pyrometers and adjusting controls to maintain required temperature.

TAB ASSEMBLER 7-03.552. A SUBASSEMBLER II. A SMALL-PARTS ASSEMBLER III who specializes in fabricating auxiliary airfoils attached to the regular flight controls to stabilize the airplane in flight.**

TABLE-SAW OPERATOR (aircraft mfg.) A FRICTION-SAWING-MACHINE OPERATOR who cuts dural airplane extrusions or sheets, such as stainless steel channels and angles, to specifications, using a friction saw equipped with metal disks, milling cutters, or abrasive wheels.

TAG WRITER (aircraft mfg.) Writes or stamps electric wire data on identifying tabs, obtaining the information from plant specification books and making sure tags contain accurate routing information for subassembly departments. This may be a task of DETAIL ELECTRICAL ASSEMBLER.

TAIL-SURFACE-FRAME BUILDER 7-03.552**. A SUBASSEMBLER II. Assembles the members of airplane tail surfaces in a jig, and temporarily secures them with bolts, screws, or tack welds prior to final assembly gluing, riveting, or welding operations.

TANK BUILDER II 7-03.552**. A SUBASSEMBLER II. Puts together the component parts of airplane fuel tanks to make complete units; (1) bends sheet metal, using a machine equipped with rollers to form tank shells, preparatory to welding by WELDER, ALUMINUM: fits and rivets prefabricated structural members (baffles) to the hollow shells; (2) fits and bolts preformed tank shells to tank frames, drilling necessary rivet holes with a portable electric drill; inserts and spreads rivets with a rivet set to join shells to frames. Straightens tank shells by hammering out dents and bulges; removes burrs, using chisel and hammer; smooths rough spots and scratches with emery cloth and files.

TANK-FITTINGS ASSEMBLER 7-03.542**. Assembles and rivets together airplane fuel-tank: trims or files fittings as necessary to fit individual tanks, using tin snips, hand files and other small cutting tools; fastens fittings to tanks, securing them in place either by bolting or riveting with a hand rivet set, and drilling necessary rivet holes with a portable electric drill. May check functioning of float gage by comparing it to a float gage calibrator, and may take any necessary adjustments. May pour a small quantity of kerosene and oil into the tank and shake it about to clean the tank interior.

TANK STRAIGHTENER 7-03.544**. Works as a member of a two-man team who remove dents, bulges, and similar defects from airplane fuel tanks, using special hammers; examines tanks to locate dents and bulges; either taps the surfaces of tanks with a hammer to remove the bulges and dents, or holds a dolly block inside the tank against the defective areas, to facilitate the straightening action of the hammer.

TANK TESTER II 6-78.671**. A TESTER II who tests airplane fuel tanks for leaks by filling tanks with compressed air and either covering the surface with a soap solution, or submerging the tanks in water to detect the leaks.

TANK TESTER 6-84.140. Tests and makes tanks tight under water or oil pressure: tests by sounding with a light hammer to detect loose plates; tests closeness of joints by using a thin-bladed knife (feeler knife); tests for leaks by filling tank to desired level; repairs defects found by cutting, chipping, filing, and calking angles, seams and rivets, using chipping and calking tools.

TANK WASHER IV 9-03.01. A LABORER, PROCESS. A PICKLING OPERATOR who cleans airplane fuel tanks preparatory to inspection and testing.**

TAPER IX 9-03.01**. A LABORER, PROCESS. Tapes the metal frames or airplane parts, such as ailerons and rudders so that the fabric covering can be more easily attached: cuts strips of adhesive tape to the proper size with scissors; places tape on exposed rows of rivets, screws or flanges, along sharp edges and at junction points between parts of the frame.

TELEPHONE OPERATOR II 1-42.32. Performs same duties as outlined in TELEPHONE OPERATOR I except switchboard is equipped with cords and connections are made by plugging in jacks in holes or slots on the switchboard. May supply information to callers or take messages over phone. May keep records of number of calls made, toll charges, and other pertinent information. May perform a wide variety of clerical duties, such as proofreading, typing, and sorting mail when not engaged in handling calls. May operate an auto-call, device that controls a system of bells or buzzers throughout an establishment which calls various company officials to the phone.

TEMPLATE FILER 6-94.230**. Cuts out and files to size sheet-metal templates, following the previously made markings on the metal; cuts sheet metal roughly to size, using a power band saw, files the roughly cut templates to exact dimensions as indicated by scribed lines, using hand files.

TEMPLATE INSPECTOR 4-80.025**. Examines finished metal templates for conformity to specifications, using micrometers, protractors, and other precision instruments. May enlarge undersized metal sections by pounding them on an anvil with a ball-peen hammer; files and smooths hammered and oversized sections using various hand files.

TEMPLATE LAY-OUT MAN 4-80.020**. A SHEET-METAL LAY-OUT MAN I who develops and draws on sheet metal the outlines of templates to be used in the fabrication of airplane parts.

TEMPLATE MAKER IV 5-17.255**. Makes sheet-metal templates for airplane parts according to loft board lay-outs and other specifications, using various hand tools and metal-working machines; locates holes, cut-outs, and bends, using his knowledge of geometry and trigonometry, and marks the lay-outs, using protractors, scribers, dividers, and other precision instruments.

TEMPLATE STORAGE CLERK 1-38.01**. A STOCK CLERK II who receives, stores, and issues templates used in the manufacture of airplanes; keeps appropriate records of templates received and issued.

TEST PILOT (air trans.; aircraft mfg.) Tests new, used, experimental, and modernized airplanes on the ground and by flight to determine their airworthiness: inspects airplane preparatory to flight, examining items, such as quantity of fuel, operation of controls, and functioning of motor cooling system; starts and warms up motor, listening to motor sounds at various speeds to determine proper functioning and observing response of motor instruments; taxies airplane about flying field, testing controls, brakes, and shock absorbers; gives instructions for adjustments or replacements to AIRPLANE MECHANIC I; PLUMBER, AIRCRAFT; and RIGGER IX; releases brakes, taxies down runway and takes off; puts airplane through vigorous flight tests involving aerobatics, rating action of motors, controls, and instruments; lands airplane and files a report.

TESTER I 6-78.671#. Tests such objects as cylinders, fittings, tanks, and valves for leaks by water pressure; clamps work over a water inlet on a table; turns on valves that admit water under pressure to interior of work; observes gages and turns off water when prescribed pressure is reached; examines work for leaks. May subject work to higher pressure to test it for strength against bursting. May obtain pressure by working a hand actuated hydraulic pump.

TESTER II 6-78.671. Tests such objects as cylinders, fittings, tanks, and valves for leaks with compress air; clamps work on a table over an air inlet or clamps plugs provided with air inlets into ends of openings; may place a small quantity of water or soapy water inside object being tested; turns valve to admit compressed air to interior of work and shuts off valve when gage indicates that prescribed internal pressure is obtained; examines work for leaks which will become apparent from falling gage pressure, escaping jets of air, and soap bubbles when soapy water, is used.

THREAD-MILLING-MACHINE OPERATOR 6-78.143. Tends a semi-automatic machine that cuts screw thread on metal objects with a milling cutter or a hob; places a work in machine (the machine is usually set up and adjusted by a JOB SETTER): turns handwheel to increase distance between centers; turns handwheel until centers press into holes in ends of work and clamps handwheel; or, opens chuck on machine by moving a valve or by hand, with a wrench, places end of work in chuck, and tightens chuck to hold work; starts machine; takes work from machine, and repeats cycle after machine is automatically stopped after cutting thread.

TIME STUDY MAN II 0-68.73. Observes, records, and makes standard calculation of times of the less difficult industrial operations, usually under the direction of TIME-STUDY ENGINEER.

TIMEKEEPER RUNNER (clerical). Collects and returns work orders and employees time-clock record cards to expedite the clerical duties of the time and payroll sections of an industrial plant.

TINNER IV; tinner and solderer; tube tinner (aircraft mfg.) A LABORER, PROCESS. Dips the threaded parts of small metal castings and the ends of copper tubing in molten solder to seal threads tightly preparatory to subsequent connections and to facilitate soldering operations: cleans dirt and grease from metal surface and applies soldering flux; dips metal part to be tinned in pot of hot liquid solder; dips part in solution of carbon tetrachloride to remove remaining flux.

TOGGLE-PRESS OPERATOR II 6-88.630. Forms automobile body parts from sheet-metal blanks with a stamping press in which power is applied to the descending die by means of a toggle joint; lifts, or directs one or more helpers in lifting, a sheet-metal blank onto machine bed and positions it over lower die; applies a drawing compound to the blank as required; depending on the size and make of press, either pulls lever or pushes control buttons causing powered, upper ram to descend and shape blank to contour of lower die; stops press after one cycle of operation, removes stamping, and inspects it for flaws, such as breaks, wrinkles, or puckers; may help DIE SETTER I to install or aline die.

TOOL-AND-DIE INSPECTOR; die-and-tool inspector (aircraft mfg.). A TOOL INSPECTOR who examines and tests, under production conditions and while they are in use, new and reworked tools and dies for conformity to specifications, materials used, and accuracy of design.

TOOL-AND-DIE MAKER 4-76.040*. Constructs, repairs, and maintains machine shop tools, jigs, fixtures, and instruments, calibrating them according to specifications, and also dies used for forging, punching, stamping, and other metal forming work; operates various machine tools, performing layout work and fitting and assembling parts as necessary.

TOOL-AND-DIE-MAKER APPRENTICE 7-94.112**. Performs duties as described under APPRENTICE I.

TOOL CHASER; tool boy; tool carrier; tool dispatcher (any ind.). A LABORER. Carries by hand, or transports on hand truck or other vehicle, tools, dies, instruments, or other equipment between the tool-storage room and various workmen. May keep written records of tools and equipment issued to workmen.

TOOL CLERK 1-38.05. Is in charge of storing tools and equipment, such as wrenches, machine attachments, measuring devices, and power-driven handtools; issues tools to, and receives them from workmen; keeps records of the receipt and issuance of tools; unpacks and stores new equipment; reports damaged and worn-out equipment to superiors. May make minor repairs to equipment; may requisition new equipment as needed; may distribute equipment to workers.

TOOL DESIGNER 0-48.41. Designs special tools and fixtures, such as boring bars and milling-machine tools; may do frating. Frequently is a MACHINIST II, using types of machines for which he is designing tools.

TOOL-DRAWING CHECKER; checker (aircraft mfg.). Checks airplane tool-drawings made by TOOL DESIGNER for inaccuracies of detail and to determine shop feasibility of designs: visually compares design of the jig, fixture, or tool with drawing of airplane parts, matching coordinating points for accuracy of fit; examines drawing details, such as dimensions, angles, allowances, and shop-notes, for errors, guided by specifications on engineering drawing and his knowledge of mathematics and drafting; verifies size and quantity of materials and methods of fabrication; notes corrections on drawings in pencil or ink.

TOOL DRESSER I 5-84.010. Sharpens and tempers picks, rock drills, mattocks, and similar tools (except knives, wood chisels, and other fine-edged tools) by heating them to proper temperature and then quenching them in water or other quenching medium. May file, or grind, fine cutting edges on tools. May cut one or more pieces of tool steel to desired length with chisel and hammer, and fashion rock tools or chisels from them.

TOOL GRINDER I 5-84.120. Sharpens shears, scissors, hair clippers, surgical instruments, cleavers, and other fine-edged cutting tools that must be ground to a very fine tolerance; grinds tool on grinding wheel by holding cutting edge against the rapidly rotating wheel until desired edge is obtained; or clamps tool in holder or carriage to hold it steady against wheel; grinds surgical instruments and razors on fine-grained wheels and holds them by hand on a whetstone. May sharpen hand saws.

TOOL-GRINDER HELPER 9-65.43*. A LABORER. Performs duties as described under HELPER III. Usually assists by grinding tools on stones to rough shape, preparatory to finishing.

TOOL-GRINDER OPERATOR 5-84.110. Sharpens cutting tools, jigs, and fixtures with a modified universal grinder, using variously shaped abrasive wheels; fastens appropriate abrasive wheel to spindle of machine; mounts arbor on which milling cutter has been pressed between centers on machine, or mounts other types of cutters on machine in appropriate fixtures; swivels spindle of machine to appropriate angle for grinding desired bevel on cutting edges of tool; starts motor and turns handwheel to bring abrasive wheel into contact with edge of cutter; turns handwheel to feed rotating abrasive wheel along edge to be sharpened; turns cutting tool about to present successive edges to abrasive wheel. May use a dividing head to turn milling cutters the exact amount required to present successive teeth. May be specifically designated according to type of tool ground, such as BROACH GRINDER: HOB GRINDER: PUNCH GRINDER: REAMER GRINDER.

TOOL HARDENER 4-87.230. Tempers or hardens machine tools, jigs, fixtures, and other parts, selecting for each piece the method of heat treating best suited to the type of steel involved and the use to which the tool or part will be put: case-hardens some parts.

TOOL INSPECTOR 4-76.220. Tests and approves new gages, jigs, fixtures, and precision tools before they are used by production workers, and inspects them in use to make sure they are maintaining their accuracy, using master gages, Johansson, blocks, micrometers, and other precision instruments; checks gages and production against blueprint specifications, working to fine limits, frequently to tolerances as fine as 0.0002 inch.

TOOL MAKER 4-76.210. Specializes in the construction, repair maintenance, and calibration of machine shop tools, jigs, fixtures, and instruments, operating various machine tools and performing other highly skilled work, such as laying out, fitting, and assembling parts.

TOOL MAKER, BENCH 4-76.210. A TOOL MAKER who fits and assembles, according to specifications, light machinery, gages, and cutting tools, scraping, filling, joining, and testing parts.

TOOL PLANNER (aircraft mfg.) Determines tools, equipment, and correct sequence steps of fabrication and assembly to be used in manufacturing airplanes: determines most economical and efficient shop location of tools by analyzing engineering blueprints and specifications; records step-by-step plan of the tooling procedures, routing such procedures to proper departments; cooperates with other TOOL PLANNERS in coordinating operations for entire shop; submits own section of plan to PRODUCTION PLANNER for approval.

TOOL-PROJECT MAN (aircraft mfg.) Directs and coordinates shop activities to facilitate tooling in an airplane manufacturing plant, guided by procedures laid out by the TOOL PLANNER: determines most efficient lay-out and fabrication methods to be followed in complying with production schedules, using his knowledge of engineering and shop methods, tool designing, and production control; eliminates stoppages due to faulty scheduling by rearranging tooling-production methods; records specification-changes for jigs, fixtures, dies, and hand and machine tools, using special file; directs the inclusion of such revisions on the shop blueprints.

TOOL REPAIRMAN 4-76.210. A TOOL MAKER who repairs tools, jigs, and fixtures used in cutting machines by reshaping, sharpening, and refinishing them by hand, using files, abrasives, and other hand equipment, and by machine, using grinding wheels, polishing wheels, and other power-driven equipment; inspects work visually and tactually.

TOOL-SALVAGE MAN (mach. shop.). A TOOL INSPECTOR (mach, shop) who inspects and measures worn and undersized metal-cutting tools, attaching to each a written order to have it remarked and cut down to the next smaller size if such can be done, or scrapping the tool if it cannot be salvaged; uses various precision gages and instruments.

TOOL STRAIGHTENER 4-76.210. A TOOL MAKER WHO corrects warping of metal-cutting tools developed during heat treating; heats warped area with a hand torch or by putting the warped portion of the tool in a furnace; straightens heated section with hand tools or a hand press or arbor press. May use special device which shows high spots on a recording dial when piece is revolved on blocks in contact with feeler arms.

TOOL TROUBLEMAN 4-76.210. A TOOL MAKER who inspects cutting tools that do not operate satisfactorily and adjusts them by grinding and other operations.

TRACER IV 0-48.31. Copies drawings of machines and parts made by DRAFTSMAN by tracing them with ink or pencil upon transparent paper or cloth spread over the drawings; uses T-square, compass, pens and other drafting tools.

TRACTOR OPERATOR 7-36.510. Operates a gasoline-powered or Diesel-powered, automotive or crawler-tread tractor to haul vehicles or implements, such as dump wagons, graders, plows, rollers, or trailers, to pull out stumps or other objects inbedded in the ground, or to pull the cable of a winch in raising and lowering or loading and unloading heavy equipment or material: regulates feed of fuel and starts engine to drive tractor; drives tractor by manipulating throttle, levers, and pedals, steering it by turning wheel or working levers or pedals which individually control both crawler treads. May couple and uncouple loads to and from tractor. May oil, grease, and make adjustments and minor repairs to tractor.

TRAILING-EDGE MAN 4-80.050**. A SHEET-METAL WORKER, AIRCRAFT I who shapes the trailing edges of airplane airfoils, such as elevators, ailerons, and rudders.

TRANSPORTATION CLERK (II) (aircraft mfg.). Expedites the processing of parts and assemblies by maintaining a regular route of deliveries and pick-ups of parts, assemblies, equipment, and mail within a plant, using hand or motorized trucks for transportation; sorts material at regular stations to facilitate efficient delivery. May make special deliveries or pick-ups on request.

TREASURER 0-97.04. Directs finances of a business firm or organization; collects money, authorizes expenditure, keeps records of financial transactions; makes financial reports to other officials or governing boards; works in close cooperation with CONTROLLER and may act as CONTROLLER.

TRIM-AND-COVER INSPECTOR 5-03.850**. Inspects the fabric covering of aircraft before and after installations: examines the fabric for defects, such as holes or pulled threads; measures fabric coverings to ascertain that they are within specified limits; inspects fastenings, such as zippers, grommets, and snaps for proper functioning; examines installed covers for alinement of seams, tension of cloth, and size and quality of seam stitches.

TRIM-SAW OPERATOR 6-78.612**. A CIRCULAR-SAWING-MACHINE OPERATOR who cuts aircraft sheet metal to specified size and shape preparatory to forming operations.

TRIM SAWYER I 6-33.222. Operates circular saw (m) equipped with sliding table to saw furniture stock to lengths, or to cut the ends square: sets end stops to lengths of parts to be sawed; starts saw and lays stock on table against guide and end stop; pushes table, bearing stock past saw disk; pulls table back when cut is complete.

TRIMMER I 7-03.562**. A SUBASSEMBLY INSTALLER II. Installs paneling and other decorative finish in airplane cabins and trims the cabins with appropriate fabric, leather, and metal materials: fastens sheets of fabric-covered cellulose to cabin walls with spring clips; stretches fabric lining between structural elements and installs metal or fabric-covered panels by fitting and securing them in place with screws and metal strips, drilling necessary screw holes with a portable electric drill; installs fittings for, and hangs drapes and shades; positions and bolts in place cabin seats, and lays and tacks down carpet. May install medicine cabinets and other equipment.

TRIMMER II 6-27.054*. A CUTTER, MACHINE I who cuts fabric coverings for airplane parts, such as fuselages, wings, and control surfaces; installs grommets and snap fasteners in fabric.

TRIMMER III 6-27.816**. Cuts and finishes heavy cotton, canvas, and duck pieces to be installed in airplane cabins and on such parts as wings and tails; cuts parts from whole cloth using a cutter; hems the cloth according to specifications, installing zippers, stiffeners, snap fasteners, and grommets, using a grommet machine; paints edges of cloth with shellac to stiffen them and to prevent raveling.

TRIMMER HELPER VI 9-03.01**. A LABORER, PROCESS. Performs duties as described under HELPER III.

TRUCK DRIVER, HEAVY 7-36.250. As for TRUCK DRIVER, LIGHT, except that truck has a capacity of greater than three tons and is used to haul heavy loads. A distinction that may be made between this worker and TRUCK DRIVER, LIGHT is that he may be required to have a stronger physique.

TRUCK-DRIVER HELPER. A LABORER. Assists a TRUCK DRIVER, HEAVY-OR TRAILER-TRUCK DRIVER, sharing with him the duties of loading and unloading the truck, shifting articles about on the truck, and handling the heavy or cumbersome articles, such as cases of bottled or canned goods, refrigerators, or sacks of material. May drive to relieve TRUCK DRIVER. May be specifically designated, as TRAILER-TRUCK-DRIVER HELPER. Does not run delivery of light goods from truck to customer.

TRUCK DRIVER, LIGHT 7-36.260. Drives a light truck (under three tons capacity) for transporting light loads, such as in running errands for a garage, construction company or other establishment, in hauling material about an industrial yard, and in hauling articles from factory to post offices, railroad stations, or other places. May load and unload truck. Does not make deliveries over an established route.

TRUCKER, HAND, A LABORER. Pushes or pulls hand trucks, cars, or wheelbarrows, used for transporting goods and materials of all kinds about a warehouse, manufacturing plant, or other establishment; usually loads and unloads hand trucks or wheelbarrows. This job is usually performed by an unskilled manual worker who, in addition to trucking, performs numerous other laboring duties such as stacking goods or material. Frequently specifically designated according to material handled, as casting trucker or cloth trucker.

TRUSS ASSEMBLER 5-03.554**. A SUBASSEMBLER III. A FITTING MAN who assembles steel fuselage frame supports called trusses.

TUBE ANNEALER (aircraft mfg.) Anneals copper tubing by playing flame from a gas torch over it: lays copper tubing on asbestos-covered work bench; makes adjustments in gas torch to obtain flame of proper character, and plays the flame over the tubing until the copper becomes cherry red in color, indicating the correct degree of temperature has been reached; places tube in pickling tank, after it has cooled somewhat, to remove scale, ref. PICKLING OPERATOR.

TUBE ASSEMBLER (aircraft mfg.) A DETAIL ASSEMBLER II. Assembles preshaped tubes into subunits on a specially equipped board prior to their installation on airplanes: fits numbered tubes on board into positions indicated by numbers and guides on board, bending tubes by hand to achieve correct contours, and secures them to board with fasteners; wraps rubber lacing around tubes to unite assembly; cuts rubber fuel-line tubes, identifys them by numbers and color bands, using a rubber stamp and paint brush, and places rubber caps over ends to prevent accumulation of dirt. Workers may be specifically designated according to degree of proficiency required as tube assembler, class a; tube assembler, class b; tube assembler, class c.

TUBE BENDER, HAND; hand bender (aircraft mfg.) Bends metal tubing by hand for use in aircraft hydraulic and electrical installations: (I) draws outline of tubing on cardboard sheet, using template; bends tubing to shape as indicated on diagram, laying tubing on diagram from time to time to check accuracy; (2) bends tubing by hand using a bending board (flat board equipped with blocks of wood placed in such a manner that when tubing is bent around them the desired shape is attained); makes new bending boards by cutting blocks on a band-scroll-saw, ref. BAND-SCROLL-SAW OPERATOR, and attaching blocks to a flat board in correct position as indicated by the template.

TUBE-BENDER HELPER (aircraft mfg.) A LABORER, PROCESS. Performs duties of lesser skill to assist STEEL TUBING BENDER or TUBING BENDER II in shaping aircraft tubing; packs sand or places mandrel in tubing preparatory to bending operations; assists in operating the machine or in clamping tubing in bending jigs.

TUBE-BENDING-MACHINE OPERATOR I 6-95.053. Operates a machine that bends oil and gas line tubing to uniform shapes; greases mandrel, slides tube over mandrel and between mandrel and binding roll of machine up to the clamp which holds the tubing in the machine, trips clamp by hand; pulls lever or steps on pedal to operate machine which bends tubing by pulling it between the mandrel and the binding roll; stops machine when bend is complete; releases clamps; removes bent tubing from machine by hand; gages the accuracy of bend by holding tube against a pattern; places bent tubing on pile or conveyor. May set up machine.

TUBE-BENDING-MACHINE-OPERATOR HELPER; tube-former-operator helper (aircraft mfg.). A LABORER, PROCESS. Performs duties of lesser skill to assist TUBE-BENDING-MACHINE OPERATOR I in bending aircraft tubing: secures tubing and tools from stock and tool rooms; helps to locate tubing and mandrel on the machine; attaches clamps to the work; stacks bent tubing for removal.

TUBE CUTTER V 8-93.86. A LABORER, PROCESS. Cuts small brass tubing (less than one inch) to length after it has been drawn, by feeding it under a shearing blade and depressing a pedal to drop blade and cut through tubing.

TUBE FLARER (aircraft mfg.) Flares the ends of tubing used in aircraft installations by operating a power machine (similar to a lathe) which rotates a tool against the end of tube to spread it: installs proper cone-shaped tool in eccentric chuck of machine and places proper sized die in fixture for holding tubing and guiding flare; places tubing in a fixture and fastens it in place by screwing sides of fixture together, forcing die to tighten around tubing; depresses pedal, forcing end of tubing held in fixture against rotating tool, causing the end of tubing to be rolled outward to the shape of the die, forming flare; removes tubing from fixture by releasing screw.

TUBE-FLARER HELPER (aircraft mfg.) A LABORER, PROCESS. Slips tube couplings and sleeves on sections of metal tubing prior to flaring operations, ref. TUBE FLARER, and wraps rubber bands around ends of tube to hold sleeves and couplings in place after flaring operations have been completed.

TUBE-FLARING-MACHINE OPERATOR 6-88.745. Operates a special type of forging machine which upsets, or increases the diameter of, steel tubing used for drive shaft housings and rear axle housings, to make room for differential gears, universal joints, bearings, and other parts.

TUBE WRAPPER; asbestos-tube wrapper (aircraft mfg.) A LABORER, PROCESS. Installs protective wrapping on metal tubing preparatory to installations in aircraft: clamps in vise sections of metal tubing to be covered with asbestos; cuts section of asbestos tubing of proper length and slips it on metal tube; wraps cloth tape spirally from end to end of asbestos, pasting loose end to tube with daub of waterglass; cuts hole in small piece of cloth, slips it over metal tube up to end of wrapping, and laps it over end of wrapping, pasting it down with waterglass; spirals second wrapping of cloth tape over first wrapping and paints entire covering with waterglass to bind it securely.

TUBING BENDER II 6-95.053**. A TUBE-BENDING-MACHINE OPERATOR I who shapes tubing used in airplane fuel, hydraulic, and electric lines according to specifications; flares and reams tubing by machine preparatory to the attachment of fittings.

TUBING INSPECTOR II 6-78.677**. Inspects aircraft metal tubing for correct shape and good condition: determines that shape and size of tubing sections conform to specifications, using templates and check jigs, examines tubing by sight and touch to detect cracks, broken seams, defective fittings, pitted surfaces, and similar flaws; inspects fitting with a magnet to ascertain that they are made of the proper metal; examines painted identification bands for conformity to requirements; fills in rejection tag. May use precision instruments such as micrometers and calipers.

TUBING OILER 9-03.01**. A LABORER, PROCESS. Lubricates the interior of fuselage and wing frame tubings to prevent rust; lifts fuselage frame into oil pan, assisted by other workers; plugs all holes in frame except one; connects oil line to frame tubing; manipulates controls to force the oil through the frame tubing, lubricating the interior; disconnects oil lines, permitting oil to drain from the frame; plugs fitting and tapes fuselage frame surfaces to provide protection during sandblasting.

TUBING TESTER 6-78.671**. A TESTER I (found.; mach. shop) who tests airplane tubing and fittings for leaks by subjecting them to controlled hydraulic pressure.

TUBING WASHER 8-74.10. Cleans formed metal tubing to remove grease, oil, and other foreign substances: immerses tubing in tank of soapy water, scrubbing the external surfaces with brushes and squirting water into the tubing with a hose to remove adhering matter; rinses soaped tubing in tank of clear water to remove suds; dries insides of tubing by directing blasts of air from a hose into the tubing, and wipes off exterior surfaces with rags; drains, cleans, and refills tanks when necessary.

TUBING WASHER 9-03.01**. Cleans formed metal tubing to remove grease, oil, and other foreign substances: immerses tubing in tank of soapy water, scrubbing the external surfaces with brushes and squirting water into the tubing with a hose to remove adhering matter; rinses soaped tubing in tank of clear water to remove suds; dries insides of tubing by directing blasts of air from a hose into the tubing, and wipes off exterior surfaces with rags; drains, cleans, and refills tanks when necessary.

TURRET-LATHE OPERATOR 4-78.021. Shapes external and internal cylindrical surfaces of metal objects, such as castings or forgings, which are best machined when held in a chuck. The machine is semi-automatic, being equipped with a turret that can be set up to present each of the tools required for a cycle of machining operations to the work in sequence. May be specifically designated according to make of lathe (m) such as JONES-AND-LAMSON-LATHE OPERATOR; LIBBY-LATHE OPERATOR.

TURRET-LATHE OPERATOR, AUTOMATIC 6-78.021. Tends a fully automatic turret lathe in which the actions of all tools are controlled automatically, frequently by cams, feeding blanks into the machine and disposing of machined parts. The machine is usually set up and adjusted by a JOB SETTER III.

TURRET-LATHE SET-UP MAN (mach. shop). A JOB SETTER II who installs and adjusts cutting tools of a turret lathe.

TURTLE-BACK MAN 6-33.925. An AIRPLANE WOODWORKER II who assembles airplane parts which are attached to the bottom of the fuselage to give a rounded appearance, using prefabricated wooden parts.

UNISAW OPERATOR; unipoint-saw operator (aircraft mfg.). Cuts dural airplane extrusions, such as channels and I-beams, into sections, and trims ends using a power-operated saw that may be tilted or turned to different operating angles: mounts circular saw on horizontal spindle of machine; turns handwheels to adjust position of saw and saw table; regulates guide to hold extrusion in proper alinement and adjusts stop; starts machine; lays extrusion on table against guide and trims end; pushes trimmed end to stop and cuts off section of extrusion; stops machine, removes saw and checks saw for warp, using a straight edge; removes metal clogging saw teeth. ref. VARIETY-SAW OPERATOR.

UNISHEAR OPERATOR, PORTABLE (aircraft mfg.) Cuts out irregularly-shaped sheet metal airplane parts using a portable unishear machine: lays template in various positions over metal sheet on work bench to obtain maximum number of parts; traces outline of template on sheet of metal, using soft colored pencils; cuts out parts with a portable hand-controlled electric shear (m) to which a vertical cutting blade operating in center of an open jaw is attached; places parts in separate piles and tosses scrap metal into bins. May tighten shear jaws with screw drivers.

UNIVERSAL-GRINDER OPERATOR 4-78.511. Grinds external and internal cylindrical surface with a machine that differs from a plain cylindrical grinder (m) only in that the abrasive wheel spindle may be adjusted to feed at selected angles to the axis of the work for grinding tapered holes or sharply tapering external surfaces.

UNIVERSAL-TURRET-LATHE OPERATOR 4-78.021. A TURRET-LATHE OPERATOR who shapes external and internal cylindrical surfaces of metal objects with a semiautomatic lathe (m) provided with a rotary multiple tool holder that can be rapidly set up to present all the tools to the work for a cycle of operations (the universal machine is adapted either to chucking work, or to work bar stock.)

UNIVERSAL-WOODWORKING-MACHINE OPERATOR 4-33.311. Operates a universal woodworking machine, to perform various operations on wood, such as chamfering, gaining, sawing, shaping, and tenoning; sets up and adjusts the various cutting tools according to specifications shown on blueprints, using ordinary measuring tools such as scales, gages, and templates; fastens wood material in machine by engaging clamps or vises, or by holding the parts by hand; starts machine and manipulates tool carriage or spindle to effect the desired machine operation. Must have a good knowledge of wood in order to use the proper feeds and speeds to obtain the best results with the least amount of waste.

UPHOLSTERER II 4-35.720. Installs, arranges, and secures springs, padding, and covering material to frames of overstuffed chairs and davenports: sets and secures springs in position in furniture frames, cotton wadding or other filling material, in layers over covered springs, folding edges and packing it as required to make a smooth, rounded pad; cuts and tacks burlap or canvas tightly and smoothly over padding; draws assembled cover over burlap, cutting seams or cover as necessary to make a perfect fit; tacks cover tightly over burlap to frame; tacks denim or cambric over backs of frame openings; tacks fringe, tape, binding, or other trimming material in place.

UPHOLSTERY-AND-TRIM CUTTER 6-27.060**. Cuts fabric, leather, and rubber materials according to patterns for subsequent fabrication into instrument cases, tubing covers, and similar articles; selects specified materials from stock and marks cutting lines with chalk or scratch awls, using squares, protractors, and straight edges; cuts material along lay-out lines, using scissors, knife, and hand shears, and an electric knife, sews leather and felt guards on cables, tubing and other assemblies by hand.

UPHOLSTERY-AND-TRIM INSPECTOR 7-59.433**. Inspects upholstery and trimming installations in completed cabin interiors: examines canvas, leather, and fabric items in cabins, such as seats, seat cushions, safety belts, and wall coverings, testing stitching, comparing the completed installations with blueprints to verify color and quality of materials, and measuring the objects to ascertain that they were properly cut; compares synthetic rubber parts with samples to determine that the proper sizes and kinds have been installed; completes rework and rejection tags.

UPHOLSTERY CLEANER I 9-03.01. A LABORER, PROCESS. Blows out with compressed air the interior of trimmed and upholstered bodies to remove scraps of material, dust, and other dirt; cleans spots from trim or upholstery, using a cloth soaked in cleaning fluid.

UPHOLSTERY-MATERIAL MARKER 9-03.01. A LABORER, PROCESS. Marks lines on upholstery material for guidance of SEWING-MACHINE OPERATOR: lays cut-to-size fabric or leather on table; may pile together 50 or more thicknesses, with edges alined; places pattern on top of pile; marks pieces one by one, tracing edges and grooves of pattern onto cloth with chalk; removes piece from pile after marking. May use pattern hinged to back of table to expedite handling and alinement of pattern and material.

UPRIGHT-DRILL-PRESS-OPERATOR 6-78.083. Performs such operations as drilling, countersinking, reaming, and sometimes tapping, on metal objects with a drill press (m): fastens drill, reamer, or tap in machine; alines work on table of machine, and starts machine; pulls hand lever to feed tool to work or engages automatic feed; withdraws tool from work and stops machine. Sometimes specifically designated according to type of machine, as DRILLING-AND-TAPPING-MACHINE OPERATOR; HIGH-SPEED-FRICTION-DRILL-PRESS OPERATOR; HORIZONTAL-DRILL-PRESS OPERATOR; UPRIGHT-DRILL-PRESS OPERATOR; VERTICAL-DRILL-PRESS OPERATOR; VERTICAL-DRILL-PRESS OPERATOR, AUTOMATIC FEED.

VACUUM-SYSTEM TESTER (aircraft mfg.). An INSTRUMENT MAN IV who tests airplane suction gages and vacuum systems to detect line leaks and other defects, using a special vacuum pump; observes and times complete de-icing operation to determine that mechanism is in satisfactory working condition.

VANE-STRIP INSTALLER 7-03.001**. Installs strips along seams to strengthen the fabric covering of airplane parts: stretches the fabric over the part as tight as possible; fits strips over the edges of the fabric and cements and pins them in place; screws a strip of sheet metal (vane strip) over the seam; marks the fabric to indicate where it should be stitched.

VARIETY-SAW OPERATOR 6-33.224. Sets up, adjusts and operates a power-driven, hand-fed, circular saw (m) which, with appropriate saw disk and adjustment of saw table or guides, is used to perform any of the more common sawing operations, such as ripsawing, crosscutting, beveling, or grooving, on small stock: selects and installs appropriate sawing disk; turns handwheel or crank to adjust position of saw and saw table; starts machine; lays board on table, holds it against guide, and pushes it into rotating saw by hand.

VENEER GLUER I 9-03.01. A LABORER, PROCESS. Applies glue to thin layers of wood and passes them through rollers and drying devices to knit the layers together.

VERTICAL-BORING-MILL OPERATOR 4-78.041. Performs such operations as drilling, boring, and facing on metal objects with boring mill (m), a machine designed to make circular cuts in metal: clamps or bolts work to table or faceplate of machine: inserts appropriate cutting tools in machine and adjusts their position; starts machine, turns handwheels to control the action of cutting tools, engages automatic feed, and observes action of machine; stops machine and measures work with micrometers, gages, calipers, and scale to be sure machine work is carried out to prescribed dimensions; lubricates machine, sharpens cutting tools. Sometimes specifically designated as VERTICAL-BORING-MILL OPERATOR when the work is held on a horizontal table or faceplate under vertical spindle; HORIZONTAL-BORING-MILL-OPERATOR when the work is held vertically and acted upon by tools held on a horizontal spindle. The work done on this machine may also be performed on a vertical turret lathe (m).

VERTICAL-DRILL-PRESS OPERATOR 6-78.083. Performs such operations as drilling, countersinking, reaming, and sometimes tapping; on metal objects with a drill press (m): fastens drill, reamer, or tap in machine, alines work on table of machine, and starts machine; pulls hand lever to feed tool to work or engages automatic feed; withdraws.

VERTICAL-MILLING-MACHINE OPERATOR 4-78.031. A MILLING-MACHINE OPERATOR II who works with a milling machine designed to support and rotate the milling-cutter with a vertical spindle.

VERTICAL-SHAPER OPERATOR 4-78.061. Planes, shapes, or cuts grooves in metal objects with a machine that cuts with a tool held in a reciprocating head (ram): bolts or clamps work on table of machine; selects appropriate cutting tool and bolts it in tool post on machine; moves levers or shifts belts to adjust machine to cut, and feed the tool at appropriate speeds; moves ram of machine only by hand or power and sets reversing mechanism to limit ram stroke to travel required; turns handwheel to raise or lower table until work is near cutting tool; starts machine; turns crank on top of tool slide to adjust depth of cut; turns crank or handwheel to feed cutting tool into or across work or engages automatic feed; stops machine and measures work to verify its dimensions; may change position of work on table or change cutting tools as work requires; stops machine when work is completed and removes work from machine. Sometimes specifically designated according to type of machine, as HORIZONTAL-SHAPER-OPERATOR; VERTICAL-SHAPER OPERATOR.

VICE-PRESIDENT 0-97.02. Performs administrative duties subordinate to the PRESIDENT, the specific duties, such as having charge of divisions or branch offices, supervising personnel, or planning production schedules, varying according to the policy of the business or organization.

WASH-TANK MAN I 9-03.01. A LABORER, PROCESS. Washes small parts in a tank of water, cleaning solution, or acid, and wipes parts dry with cloths, prior to painting or rustproofing.

WASHER 8-74.10. A general term applied to a worker who cleans premises, raw or finished products, machines, equipment, or materials for sanitary purposes, for preparation of material or articles for processing, or for any other purpose. Usually specifically designated according to equipment cleaned, as MACHINE CLEANER: LOOM BLOWER (textile); according to place of employment as ENGINE-ROOM CLEANER: COOLER CLEANER (slaught. & meat pack.); or according to object cleaned, as FRUIT CLEANER (can. & preserv.).

WATER TENDER III 7-54.622. Checks and regulates amount of water in boilers: inspects gages attached to boilers to determine need for water; operates boiler-feed water pumps to supply the water; watches operation of pumps to insure efficient functioning and to detect defects. May sweep and clean area about pumps and boilers. May condition water by adding chemicals.

WEIGHER II (clerical) 1-45.01. Weighs incoming or outgoing materials or products of an establishment, or weighs products or waste products between processing steps, for the purpose of keeping clerical records pertaining to the shipping or receipt of articles, plant or worker production, or other phases of operation. Sometimes specifically designated, as fish weigher or fruit weigher.

WEIGHT ANALYST, AIRCRAFT; weight engineer, aircraft (aircraft mfg.) Determines the weights of the component parts of experimental airplanes in production, and records data on special forms for flight-testing: estimates the weight of the parts from preliminary drawings, making use of his knowledge of mathematics and shop fabrication; informs the AIRPLANE DESIGNER whenever specifications exceed weight allowances, necessitating corrective changes of design; weighs each part upon completion on the production floor, using balance scales; supplies FLIGHT ANALYST with resulting information to aid in determining the balance, center of gravity, and load-carrying performance of the airplanes.

WELD-SET-UP MECHANIC 6-95.047**. Fits and clamps together prefabricated parts of airplane subassemblies preparatory to welding:places parts of subassemblies, such as radiator, propellers, and fuel tanks in jigs, frequently trimming away excess metal to secure a close fit, using metal snips and files; secures parts together with clamps; drills holes in tubing subassemblies to provide for the escape of heat generated in the welding process. May tack weld subassemblies together.

WELDER HELPER, COMBINATION. Performs the duties as described under HELPER III.

WELDER HELPER, SPOT (aircraft mfg.) A LABORER, PROCESS. Performs the duties as described under HELPER III.

WELDED-PARTS INSPECTOR 4-85.070**. A WELDING INSPECTOR who examines welded airplane parts and assemblies for defects in the welds, using acceptance jigs.

WELDER, ACETYLENE 4-85.030. Fuses (welds) metal parts together by means of an oxyacetylene torch and welding rods to fabricate metal shapes or articles or to repair broken or cracked metal objects: places the parts to be joined or the object to be repaired on a flat surface, and wires, clamps, or otherwise holds objects in their relative position; assembles welding apparatus by connecting torch to hose and hose to regulators on tanks of oxygen and acetylene; lights torch and regulates flow of gases by manipulating valves until desired flame is attained; holds flame against metal until it melts, guiding flame along joint between the parts, and at the same time applying a metal rod to the molten area to supply the excess metal needed to form the weld. May dip rod into flux and apply the flux to the molten area. May preheat the parts with torch before welding to obtain a better weld and to lessen internal strains set up in the metal by the intense heat of the welding flame. May lay out (mark) metal, in accordance with blueprints, before welding. May cut metal. May also weld with electric welding apparatus, in which case worker would be classified as WELDER, COMBINATION.

WELDER, ALUMINUM 4-85.020. A WELDER, ACETYLENE or a WELDER, ARC who welds aluminum metal; must be careful to apply the flux and welding rod at the time the aluminum has reached the proper melting temperature; puddles (stirs) the molten metal to remove oxide and prevent holes forming in weld.

WELDER APPRENTICE, COMBINATION (any ind.) 7-99.035. Performs duties as described under APPRENTICE I.

WELDER, ARC 4-85.020. Fuses (welds) metal parts together by means of electric welding apparatus to fabricate metal objects or to repair broken or cracked objects, or employs electric welding apparatus to increase the size of metal parts; starts motor generator, or starts gasoline motor that drives generator; places metal objects in position on work table, floor, structure, or where welding is to be performed; wires, clamps, or otherwise holds metal parts in relative position; connects wire from one pole of generator to electrode holder held in hand and connects wire from other pole of generator to work; inserts electrode (round metal rod) in electrode holder; touches electrode to work to complete electric circuit and instantly withdraws it a very short distance, forming electric arc (the heat of the arc melts the metal directly under the electrode); guides electrode along line of weld, allowing sufficient time for the heat of arc to melt the metal (the excess metal needed to fuse or build up the parts is melted from the electrode, and the amount of metal deposited depends upon the length of time the electrode is held at any one spot); breaks electric circuit by withdrawing electrode. May lay out (mark) metal parts before welding. May turn rheostat to regulate flow of electricity from generator. May use a carbon or graphite electrode in holder and apply needed metal from a welding rod held in other hand. May employ acetylene welding apparatus, in which case worker would be classified as WELDER, COMBINATION.

WELDER, COMBINATION 4-85.040. Is capable of operating both electric-welding apparatus and acetylene-welding apparatus.

WELDER FOREMAN, COMBINATION (any ind.) 4-85.040. Performs duties as described under FOREMAN I.

WELDER HELPER, ACETYLENE 6-95.041. Performs duties as described under HELPER III.

WELDER HELPER, ARC (any ind.) 6-95.045. Performs duties as described under HELPER III.

WELDER LEADMAN; weld-lay-out man; welding specialist (any ind.) 4-85.010. Performs duties as described under FOREMAN I. Supervises WELDERS, ACETYLENE and WELDERS, ARC.

WELDER, OXYHYDROGEN 4-85.063. (tentative). Joins together metal pieces by welding, using oxygen-hydrogen equipment, following essentially the procedures as described in WELDER, ACETYLENE.

WELDER, SPOT 6-85.060. Joins together two or more overlapping pieces of metal by means of a spot-welding machine; clamps pieces together, or clamps pieces into bed of machine to hold them in desired position; depresses foot lever to bring electrodes together with metal pieces to be joined between them, thus instantly welding the pieces; releases foot pedal after required item has elapsed to make the weld and before metal is burned; occasionally cleans adhering metal from electrodes with file. May interpret blueprints and spot weld parts accordingly. Spot welding differs from bar welding in that the WELDER, SPOT does not hold or guide a hand electrode, makes no continuous welds, and is limited in the number and position of welds that can be made in one operation by the set-up of the electrodes and the metal pieces to be welded.

WELDING ENGINEER 0-19.05**. Designs or correlates the design of metal objects to be fabricated by welding, and specifies the materials to be used: determines the most satisfactory design of the parts to be welded for ease of fabrication and accessibility; specifies the kinds of metals and alloys to be employed in the parts, and the welding process and welding equipment to be used; inspects test welded parts and studies defects in the parts in the light of his knowledge of metallurgy, and his experience with the action of welding heat on metals and alloys; gives instructions to the WELDER LEADMAN and WELDING INSPECTORS preliminary to production work; inspects the first welded parts to ascertain that the production results meet minimum requirements; sets up qualification tests for the various welding jobs. Usually directs the activities of the welding departments and hires workers.

WELDING INSPECTOR 4-85.070**. Inspects welds for defects and weakness: examines welded joints for cracks, cold welds, and excessive welds, after using a flashlight and magnifying glass; similarly examines tack welds and checks the union of the parts for strain; verifies welded units with blueprints, using measuring devices such as squares, protractors, and micrometers; indicates needed reworking by marks on the parts. May employ acceptance jigs in the inspection of welded parts.

WIND TUNNEL MAINTENANCE MAN (aircraft mfg.) Installs, moves, and repairs any mechanical or electrical equipment, except instruments, and any electrical control or power circuits in the wind tunnel building, and controls disposition of gages or instruments: guided by rough sketches or preliminary blueprints, makes any electrical installations, such as the wiring of building conduit, machinery control, or switching service in the wind tunnel room, and moves, services, or repairs same, performing maintenance welding when necessary and operating power tools in repair work; locates and corrects electrical trouble in the building wiring system; wires, checks, and repairs remote control electrical interlock circuits; supervises less experienced workers in the performance of wind tunnel maintenance work.

WINDOW INSTALLER (aircraft mfg.). Installs windows in airplanes: installs prefabricated channel guides by reaming out holes with a pointed file, straightening guides by hammering, smoothing with an electric sanding machine, fastening with screws, and inserting rubber cushioning at lower end; cleanses prefabricated aluminum frame with gasoline or abrasive, glues a felt strip around edges of window pane and applies plastic cement to surface of built-in framework; sets pane into built-in framework, fits aluminum frame over pane and screws assembly together.

WING ASSEMBLER II 6-33.925**. An AIRPLANE WOODWORKER II who assembles wooden airplane wings from prefabricated parts.

WING ASSEMBLYMAN 5-03.552**. A MAJOR ASSEMBLER. An ASSEMBLYMAN VIII who joins together the component elements of airplane wings.

WING-ASSEMBLYMAN HELPER 7-03.553**. Assists WING ASSEMBLYMAN in joining together the component elements of airplane wings; aids the WING ASSEMBLYMAN in placing the wing parts in a jig; drills holes in parts using an electric hand drill; bucks rivets, installs miscellaneous accessories, such as braces and pulleys along which control cables run.

WING COVERER 5-03.010**. An AIRPLANE COVERER who covers airplane wings and ailerons with fabric.

WING-COVER INSTALLER (aircraft mfg.). A SUBASSEMBLY INSTALLER II. Installs removable steel plates and doors over wing access holes to provide a means of entrance into wing structure for repairing or adjusting parts: trims and smoothes plate with shears and file, after trying it over access hole and determining amount of cutting required; bevels edges of plate in a hand powered machine by placing edge of plate on lower roller, turning a screw until upper roller contacts plate edge, raising opposite end of plate to obtain desired degree of bevel and simultaneously turning crank to activate rollers and pulling plate through rollers; places plate in position over access hole, insets screws in previously drilled holes countersinking screw holes if necessary with an electric hand drill; tightens screws with a screwdriver. May be specifically designated according to degree of skill acquired as wing-cover installer, class a; wing-cover installer, class b; wing-cover installer, class c.

WING-FLAP INSTALLER (aircraft mfg.). A SUBASSEMBLY INSTALLER II. Installs wing flaps and controlling mechanisms on airplane wings: bolts together parts of activating apparatus, such as retraction motors, retraction arms, gears, and supporting tubes, using various hand tools as required, measuring, trimming, and smoothing connecting tubes with a band saw and powered sander, and drilling and clamping tube fittings in place, for subsequent riveting; installs wing flaps on wings by bolting flaps to hinges and securing them with cotter keys.

WING-FRAME BUILDER 5-03.554**. A SUBASSEMBLER III. A SKELETON ASSEMBLER I who assembles the members of an airplane wing in a jig, and temporarily secures them in position with bolts, screws, or tack welds prior to the final assembly gluing, riveting, or welding operations.

WING INSTALLER (aircraft mfg.). A MAJOR ASSEMBLER. Installs wing assembly on airplane fuselage: manipulates a hydraulic jack attachment of an overhead crane to aline wing terminals to fuselage; hammers prefit, frozen steel pins through terminal holes, tightens them with a torque wrench, and secures them with cotter pins. May similarly install wing by fitting together unassembled major units, such as outboard wing, inboard wing, and nose assembly, using an electric hand drill and various hand tools as necessary. May be specifically designated according to degree of proficiency acquired as wing installer, class a; wing installer, class b; wing installer, class c.

WING-TIP ASSEMBLER 7-03.552**. A SUBASSEMBLER II. A SMALL-PARTS ASSEMBLER III who specializes in assembling airplane wing-tips from prefabricated metal parts.

WIRE CUTTER (aircraft mfg.). Cuts insulated electric wire to specified lengths on cutting table, using hand cutter, hacksaw, or mechanical cutter; coils cut wire, securing it with friction tape or cord, and marking each coil with identifying tag. This is a task of DETAIL-ELECTRICAL ASSEMBLER.

WIRE TESTER (aircraft mfg.). Tests electric wire and attached terminals and sockets for satisfactory assembly and performance by using a continuity testing board to determine whether electrical current will flow continuously through the circuit. This may be a task of DETAIL-ELECTRICAL ASSEMBLER.

WIRE WORKER 7-89.056**. Makes all types of aircraft wire cable assemblies, such as control cables, tow-target cables, and engine slings; selects proper wire or cable for the making of specific assemblies; splices cables and wires using wire worker's hand tools and machines, such as a vise, wooden mallet and block, pliers, and cable-testing machine; solders wire and cable, using both hard and soft solder.

WOOD BENDER 6-39.996. Places cut-to-size lengths of wood in a steam bath, removes them when they are soft and pliable, and bends them to a desired shape in a form or jig by hand.

WOOD INSPECTOR 4-33.918**. Inspects wood materials and completed structural units of airplanes: visually inspects lumber for knots, pitch, and seasoning; determines the strength of formed wood parts which bear a heavy strain by inserting a knife blade into the grain; verifies dimensions and contours of unassembled parts against blueprints, using squares, calipers, and protractors; examines and tests wood skeletons, covered units, and completed airplanes for conformity to specifications and for strong contruction by exerting pressure on the parts by hand.

WOOD-TOOL MAKER 5-17.060*. A FORM BUILDER I who constructs forms, fixtures, jigs, and templates used in the shaping and assembly of aircraft parts. May be specifically designated according to degree of ability, such as wood-tool maker, first class; wood-tool maker, second class.

WOOD TOOL-MAKER APPRENTICE (aircraft mfg.). Performs duties as described under APPRENTICE I.

WOOD-TOOL-MAKER HELPER 9-03.01*. A LABORER, PROCESS. Performs duties as described under HELPER III.

WRAPPER I 9-65.43. Wraps packages or finished products of an establishment, making a neat, durable bundle; secures package with twine, ribbon, gummed tape, or paste. May cursorily inspect articles before wrapping for defedts, size, color, number, or other items. May segregate articles according to size of type, or according to customer's orders.

WRAPPER AND SOLDERER, solderer and wrapper (aircraft mfg.) Installs terminal fittings on aircraft cables: cuts cables to specified length, using a scale and nippers; bends cable ends snugly around fittings and clamps terminal in vise; wraps free end of loop to cable using tinned or copper wire and tightening wrapping with pliers; applies soldering flux with brush and dips terminal structure in a pot of molten solder; wipes off excess solder with a cloth; tests strength of junction with weights.

MARINE CORPS, U.S.

BE A MARINE...

Free a Marine to fight

U.S. MARINE CORPS WOMEN'S RESERVE

ACT OF CONGRESS

By Act of Congress the Women's Reserve has been
established as an integral part of the
United States Marine Corps

THE MARINE CORPS helped win American freedom in 1775 and has fought in its protection ever since. The present conflict confronts the Marine Corps with the most severe challenge in its history.

In order to meet that challenge fighting men, thoroughly prepared by Marine training, are needed at the front. But there are essential duties that must be performed by Americans in uniform here within the United States. Many of these duties *you*—the women of America—can fulfill. The tasks are not simple—industry, ingenuity and vigor are needed to do them with traditional Marine efficiency. But the inspiring part played by women in the nation's war effort to date leaves no doubt as to your ability and determination to achieve whatever must be done.

We of the Corps invite you to join us, to wear our uniform, to share our trials and triumphs, to march with us to victory.

We believe that in volunteering for the Marine Corps Women's Reserve you will be taking a step of which you will always be proud and for which your nation will always be grateful.

T. HOLCOMB,
Lieutenant General, U. S. Marine Corps,
The Commandant, U. S. Marine Corps

TODAY as never before the Marine Corps is carrying forward relentless, gruelling offensives by land, sea and air. Every trained, able bodied man in America's foremost attack force is needed at his battle station.

You, the women of America, are urged to become Marines and take over duties at home, thus releasing trained fighting men for combat. Like the men of the Corps you can receive the finest technical training and experience for a post-war career. Like them you will be called upon to display stamina, courage, unwavering devotion to duty.

The Marine Corps Reserve welcomes you to its ranks.

L. W. T. Waller Jr

L. W. T. Waller, Jr.,
Brig. General, U. S. Marine Corps,
Director, U. S. Marine Corps Reserve

WHEN it becomes our privilege to wear the uniform of the United States Marines, we realize that we have acquired more than just a uniform. Traditions of gallantry and honor on battlefields since 1775 become our traditions. Ours is the privilege of fighting for freedom side by side with the men of this historic military organization.

Never before have the women of America had such a real opportunity to serve their country. May it be given to us to wear with integrity the uniform that has been covered with glory from Tripoli to Guadalcanal.

Ruth Cheney Streeter

Ruth Cheney Streeter,
Major, U. S. Marine Corps,
Director, U. S. Marine Corps Women's Reserve

MARINE CORPS

Heritage of Victory

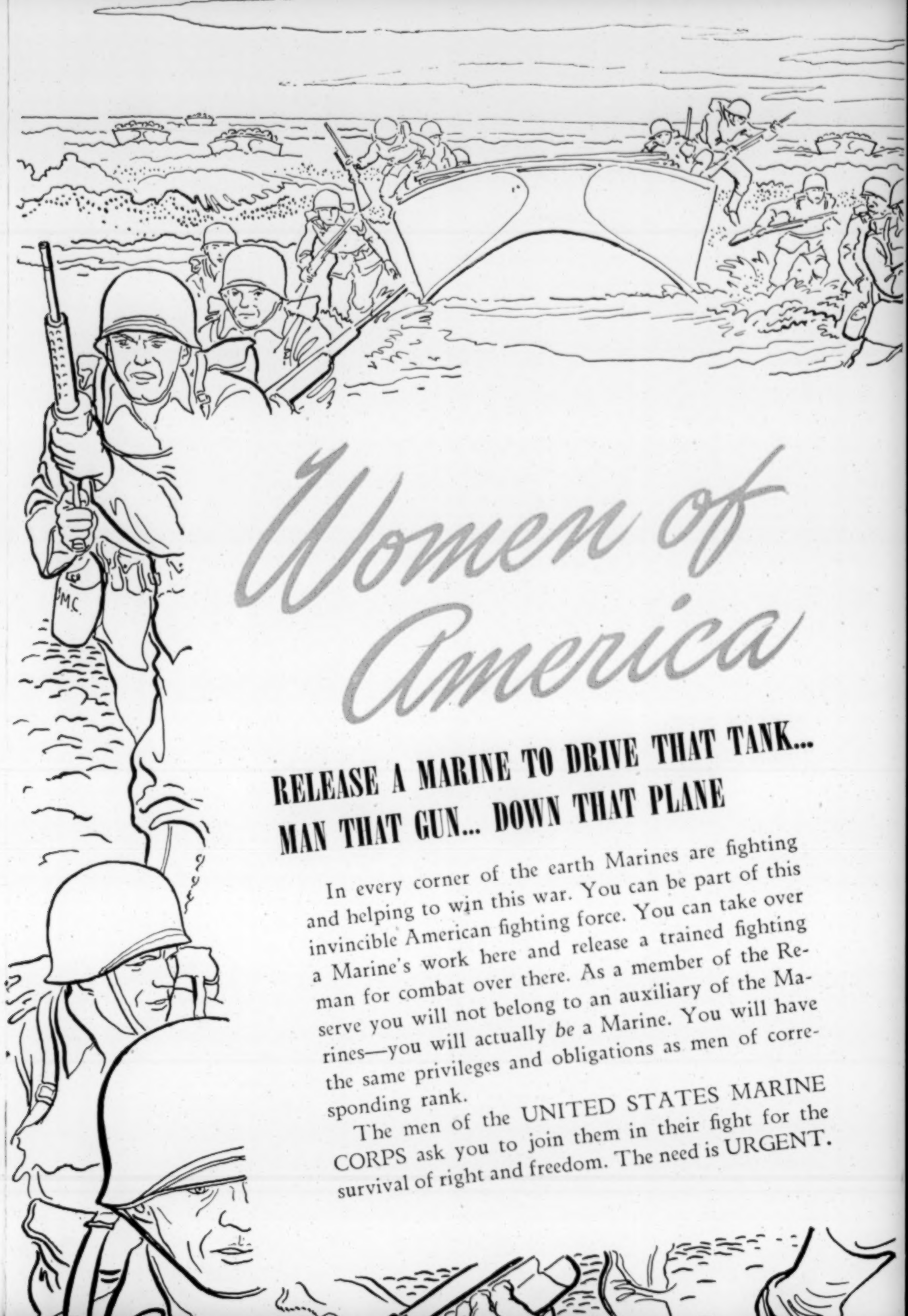
THE U. S. Marine Corps, oldest branch of the armed services, was established by Act of Congress on November 10, 1775. During the succeeding 167 years, Marines conducted almost 200 landing operations on foreign soil, from the Bahamas to the Solomons, scoring success in every one.

They crossed the Delaware with Washington and advanced against odds. With deadly fire from the main tops, they cut down enemy seamen in decisive naval battles of the Revolution.

Marines helped bring the Barbary pirates to terms; faced withering rifle fire to storm and take the heights of Chapultepec; landed 650-strong to defeat a superior force at Guantanamo Bay; and turned the tide of World War I when, advised to retreat, they replied, "Retreat hell, we just got here," and stayed in Belleau Wood to stop the German juggernaut.

These are but a few of the brilliant chapters in Marine history. Leathernecks have triumphed on land, at sea, and now in the air, in all our wars. They have been engaged many times on foreign soil to protect American lives and honor during periods of general peace. They have been—true to their motto—Ever Faithful.

Their exploits have won for the U. S. Marine Corps the respect and admiration not only of America, but of the entire world.



Women of America

RELEASE A MARINE TO DRIVE THAT TANK... MAN THAT GUN... DOWN THAT PLANE

In every corner of the earth Marines are fighting and helping to win this war. You can be part of this invincible American fighting force. You can take over a Marine's work here and release a trained fighting man for combat over there. As a member of the Reserve you will not belong to an auxiliary of the Marines—you will actually *be* a Marine. You will have the same privileges and obligations as men of corresponding rank.

The men of the UNITED STATES MARINE CORPS ask you to join them in their fight for the survival of right and freedom. The need is URGENT.

Advantages of being a Marine

Pay and Allowances—Same as officers' and men's; for actual rates of pay for all ranks, see page 12.

Uniforms—$250.00 allowance for officers and $200.00 for enlisted personnel.

Food and Living Accommodations—Provided by the Marine Corps the same as to men.

Medical Care—Complete medical, hospital and dental care free for the duration of your enlistment.

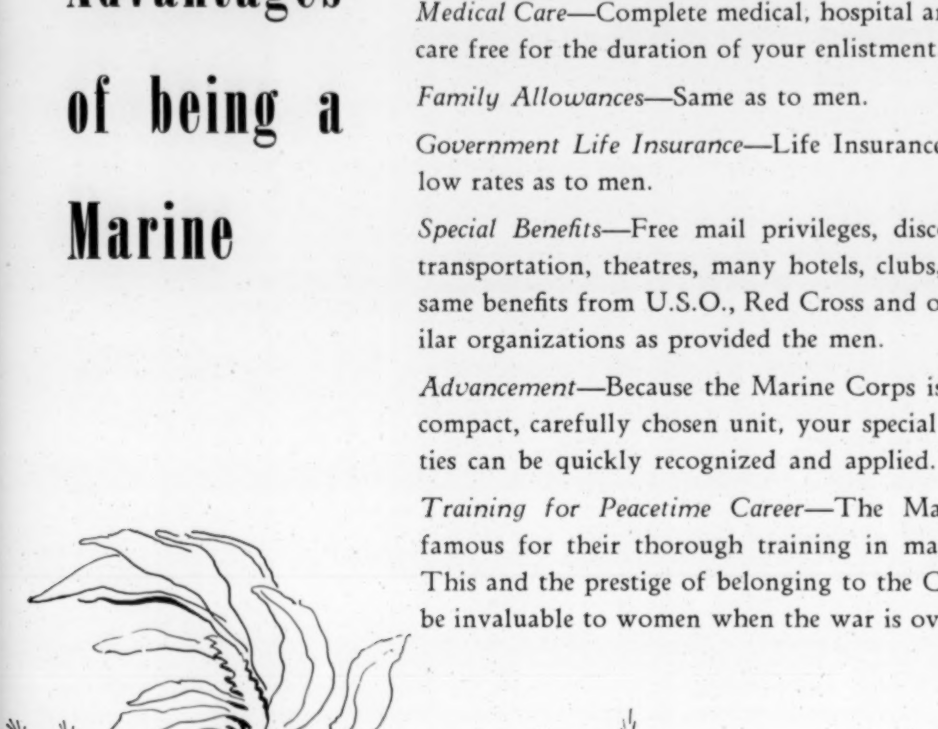
Family Allowances—Same as to men.

Government Life Insurance—Life Insurance at same low rates as to men.

Special Benefits—Free mail privileges, discounts on transportation, theatres, many hotels, clubs, etc., the same benefits from U.S.O., Red Cross and other similar organizations as provided the men.

Advancement—Because the Marine Corps is a small, compact, carefully chosen unit, your special capabilities can be quickly recognized and applied.

Training for Peacetime Career—The Marines are famous for their thorough training in many fields. This and the prestige of belonging to the Corps will be invaluable to women when the war is over.



THE MEN AT THE FRONT NEED YOUR HELP NOW!

Necessary Qualifications

MARINE CORPS WOMEN'S RESERVE

Officers	*Enlisted Personnel*
U. S. Citizen.	U. S. Citizen.
Age 20 to 50 years.	Age 20 to 36 years.
College degree or 2 years college work, plus at least 2 years of acceptable business or professional experience.	Minimum of 2 years of high school, or business school.
Sound physical condition.	Sound physical condition.
Height at least 5 feet.	Height at least 5 feet.
Weight at least 95 pounds.	Weight at least 95 pounds.
No children under 18 years of age.	No children under 18 years of age.
Character and ability references.	Character and ability references.

All applicants should be prepared to submit the following data to substantiate their eligibility:

1. Birth or baptismal certificate, or birth affidavit.
2. Transcript of their educational record.
3. Record of occupation since leaving school.
4. Three letters giving references as to their character and ability from citizens of good standing in their community.
5. (Required of officer candidates only). Two passport size photographs, 2½ x 2½", without hat, 1 full face, 1 profile.

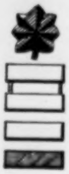
***Marital Status*—No woman will be accepted who has a husband in the Marine Corps.**

If unmarried when enrolled, she must agree not to marry until completion of her preliminary and special training.

She cannot, while in service, marry an officer or enlisted man in the Marine Corps.

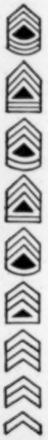
Pay and rank of U. S. Marine Corps Women's Reserve

OFFICERS

Insignia	Rank	Monthly Base Pay	Without Dependents Rent	Without Dependents Sub-allow.	With Dependents Rent	With Dependents Sub-allow.
	Major	$250.00	*$90.00	$21.00	*$105.00	$63.00
	Captain	200.00	75.00	21.00	90.00	42.00
	1st Lieutenant	166.67	60.00	21.00	75.00	42.00
	2nd Lieutenant	150.00	45.00	21.00	60.00	42.00

**Note: Officers, with or without dependents, who are assigned to quarters furnished by the Government or officers without dependents, on duty at a post or station with troops, are not entitled to rental allowance.*

ENLISTED PERSONNEL



Rank		MONTHLY BASE PAY * (Plus Allowances)
Sergeant Major Master Gunnery Sergeant Master Technical Sergeant Quartermaster Sergeant Paymaster Sergeant	First Grade	$138.00
First Sergeant Gunnery Sergeant Technical Sergeant Drum Major Supply Sergeant	Second Grade	114.00
Platoon Sergeant Staff Sergeant	Third Grade	96.00
Sergeant	Fourth Grade	78.00
Corporal	Fifth Grade	66.00
Private First Class	Sixth Grade	54.00
Private	Seventh Grade	50.00

NAVAL AND MARINE
OFFICER PROCUREMENT OFFICE

How and Where You Enlist

1. Write to the nearest Office of Naval and Marine Corps Officer Procurement (see page 17) and ask for a Marine Corps Women's Reserve application blank. Or, if there is an office close by, call in person.
2. When you apply either by letter or in person be sure to give the following information: (a) your age and date of birth; (b) your education; (c) your marital status—married, unmarried, widowed, divorced; (d) number of children if any, and the age of each; (e) if you are married, your husband's occupation.
3. If you appear to qualify on the basis of the above information, you will be sent or given an application blank and other necessary papers. When completed, return these papers to the office from which you secured them.
4. If your application is accepted, you will be asked to report for an interview, aptitude test and physical examination. If you pass these successfully, you will be sworn in—ready to serve your country in your country and release a man to fight.

How and where

FIRST SIX WEEKS

The Indoctrination Course:

You will be given your basic training at one of the major women's colleges—officer candidates at Smith College, Northampton, Mass., or at Mount Holyoke College, South Hadley, Mass.; enlisted personnel at Hunter College, New York City.

You will live and work on the college campus. This is called your period of indoctrination—of intensified training in which you will be thoroughly grounded in the history and traditions of the Marine Corps, military customs and courtesy, military terms. You will receive physical training to put you in excellent condition. You will learn the precision of close order-drill for which all Marines, in all branches of the Corps, are famous. You will develop an understanding of the incomparable team work and esprit de corps that have made your Corps the world's superlative fighting force.

AT THE END OF YOUR FIRST SIX WEEKS YOU WILL UNDERSTAND WHAT IT MEANS TO BE A MARINE

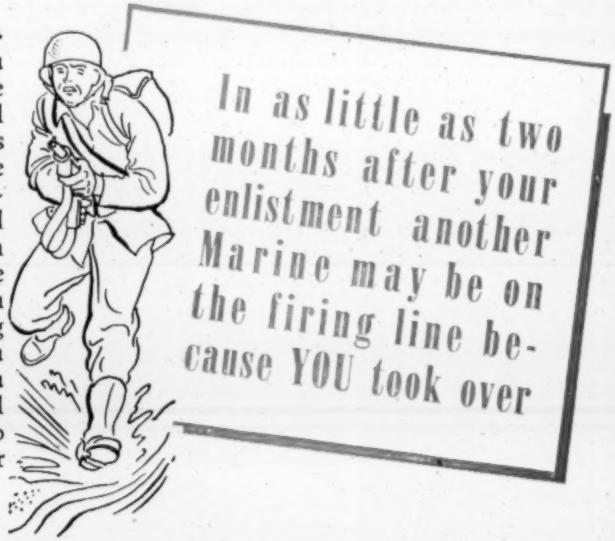
you will be trained

SPECIALIZED TRAINING

If you are already experienced in a field of value to the Corps you may be assigned to active duty immediately after your indoctrination period, or you may be given further training. Below is a partial list of duties for which women are especially required:

- Accountants
- Aerographers
- Bakers
- Bookkeepers
- Clerks
- Cooks
- Cryptographers
- Draftsmen
- Electricians
- Hairdressers
- Hostess House Attendants
- Laundry Workers
- Librarians
- Link Trainers
- Mechanics—Aircraft
- Messengers
- Messwomen
- Motion Picture Operators
- Motor Mechanics
- Office Machine Operators
- Painters—Spray Gun
- Parachute Riggers
- Passenger car and light truck drivers
- Personnel
- Photographers
- Post Exchange Clerks
- Radio Operators
- Radio Repairmen
- Stenographers
- Typists
- Stock Clerks
- Storekeepers—Aviation
- Telegraphers
- Telephone Operators
- Teletype Operators
- Theatre Ushers

For final technical training in certain fields, you will be transferred to one of the big Marine or Naval training stations or schools where men receive the same special training. Approximately 9000 women will be assigned to aviation ground force. The entire training period varies from 2 to 6 months, depending on the type of work you do as a Marine. When you have mastered your special subject—you are ready to free another Marine for combat.

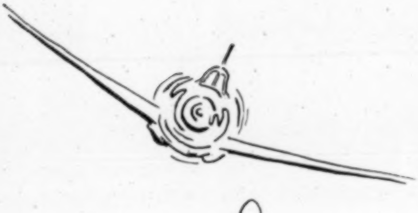

In as little as two months after your enlistment another Marine may be on the firing line because YOU took over

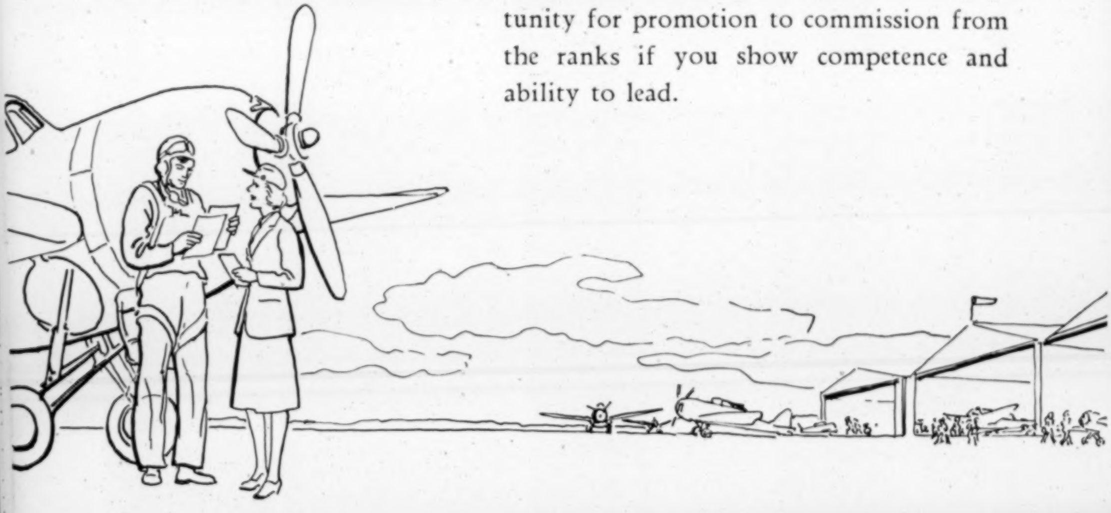
How and where you will serve

How As soon as you receive your training you will be assigned to active duty in an essential post in the Corps. You will take over a man's job and will work *with* men. You will be subject to the same discipline and working hours. The same high standard of efficiency and cooperation will be expected of you.

Where During your period of service you will see duty at one of the Marine Corps Posts or Stations within the continental United States including: Washington, D. C., New York, Philadelphia, Chicago, San Francisco, or at one or more of the big training centers: San Diego, California; Quantico, Virginia; New River, North Carolina; Parris Island, South Carolina.

Promotion Despite vast wartime expansion, the Marine Corps is still a closely-knit unit. You will have opportunity for promotion to commission from the ranks if you show competence and ability to lead.





OFFICES OF
NAVAL AND MARINE CORPS OFFICER PROCUREMENT

ATLANTA, GEORGIA	Healy Building,
BOSTON, MASSACHUSETTS	150 Causeway Street
CHICAGO, ILLINOIS	Board of Trade Bldg., 141 W. Jackson Blvd.
CLEVELAND, OHIO	Marshall Building, 11 Public Square
DALLAS, TEXAS	1530 Allen Building,
DES MOINES, IOWA	421 Old Federal Bldg., Fifth and Court Streets
DETROIT, MICHIGAN	1319 Book Building, 1249 Washington Blvd.
KANSAS CITY, MISSOURI	202 Finance Building, 1009 Baltimore Avenue
LOS ANGELES, CALIFORNIA	Please consult Marine Recruiting Station for new address.
MEMPHIS, TENNESSEE	Please consult Marine Recruiting Station for new address.
MINNEAPOLIS, MINNESOTA	4th Fl., Roanoke Bldg., 109 S. Seventh Street
NEW ORLEANS, LOUISIANA	Louisiana Building, 217-227 Camp Street
NEW YORK, NEW YORK	33 Pine Street
PHILADELPHIA, PENNSYLVANIA	17 Fl., Widener Bldg., Juniper & Chestnut Sts.
PITTSBURGH, PENNSYLVANIA	Keystone Hotel Bldg., Third and Wood Sts.
SAN FRANCISCO, CALIFORNIA	703 Market Street
SEATTLE, WASHINGTON	117 Marion Street
ST. LOUIS, MISSOURI	6th Fl., Missouri Pacific Bldg., 210 N. 13th St.
WASHINGTON, D. C.	1320 "G" Street, N.W.

You may obtain information at the nearest Marine Corps Recruiting Station if there is no office of Naval and Marine Corps Officer Procurement in your neighborhood.

Questions most

For how long do I enlist?

For the duration. You will be discharged within six months after the end of the war.

What if I should want a discharge before the war is over?

You will be accepted in the Marine Corps on a basis of absolute equality with men. It will not be possible for you to resign any more than a man at the front can resign.

Where do I get an application blank?

At any Office of Naval and Marine Corps Officer Procurement—Call or write. See list on page 17.

Must I pass a physical examination?

Yes, by regular Navy Medical Officers.

Any other tests?

One. To determine your aptitude for service. No preparation necessary.

Can mothers and sisters of Marines enlist?

Yes, they will be welcomed.

If I am under 20, can I enlist with the consent of my parents?

No. By law the minimum age is 20.

Do I begin training immediately?

Upon being sworn in you will be directed either to return home on inactive duty or to proceed to training school immediately. In either event, it is probable you will be given not less than 15 days to get ready to leave home.

When should I leave my civilian position?

Do not give it up until you are ordered to training school.

Must I already have special training?

Not necessarily. The Marines are famous for their thorough educational and training facilities.

Must I start as a private?

Yes. Ranks depend on individual records during the initial training period. If you are an Officer Candidate, you will receive a private's pay during the first indoctrination period. During the remainder of your school training you will receive cadet's pay of $65.00 a month. Your pay as an officer in accordance with your rank will begin on your being commissioned and assigned to active duty.

What will my status be during training?

Officer Candidates will be privates until completion of their preliminary course. They will then be known as Cadets until commissioned. Enlisted personnel will be privates, until promoted to higher rank. All are *Marines*—members of the United States Marine Corps, Women's Reserve.

Could I ever become an officer without a college degree?

Yes, there will be promotion from the ranks. All promotions depend entirely on individual ability and leadership.

Do I pay my own fare to training school?

No. You travel at Marine Corps expense.

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often asked

Do I get paid during training?

Yes. Your pay begins on the date you are assigned to active duty, (that is the date you are ordered to start for school).

When do I get my uniform?

At indoctrination school, but you should bring sufficient civilian clothing to see you through for at least a month.

How long does training last?

From 2 to 6 months, depending on the field.

May I choose my field?

You will be assigned to the field in which you seem most likely to succeed and in which you will be most useful in the Corps. Past training and experience will naturally affect this decision.

Will I receive physical training, military drill?

Yes, both. The Marines are renowned for their proficiency in drill. There will be a physical director at each school and an athletic program will be keyed to the type of work you do.

What about my free time during training?

Your free time is your own. You will be expected, as the men are, to conduct yourself at all times in such a manner as to be an honor and a credit to the Corps.

What happens to an Officer Candidate who fails to complete the training course successfully?

She may have her choice of transfer to the enlisted ranks, or discharge.

Will I serve overseas?

The present law limits your service to the continental United States.

May I request a particular station?

Preference will be considered, but you will naturally be expected to serve wherever your services are most immediately required.

Will I be subject to military discipline after training?

Yes—the same as men, the extent depending on where you are assigned and the type of work.

Where will I live when I am on duty?

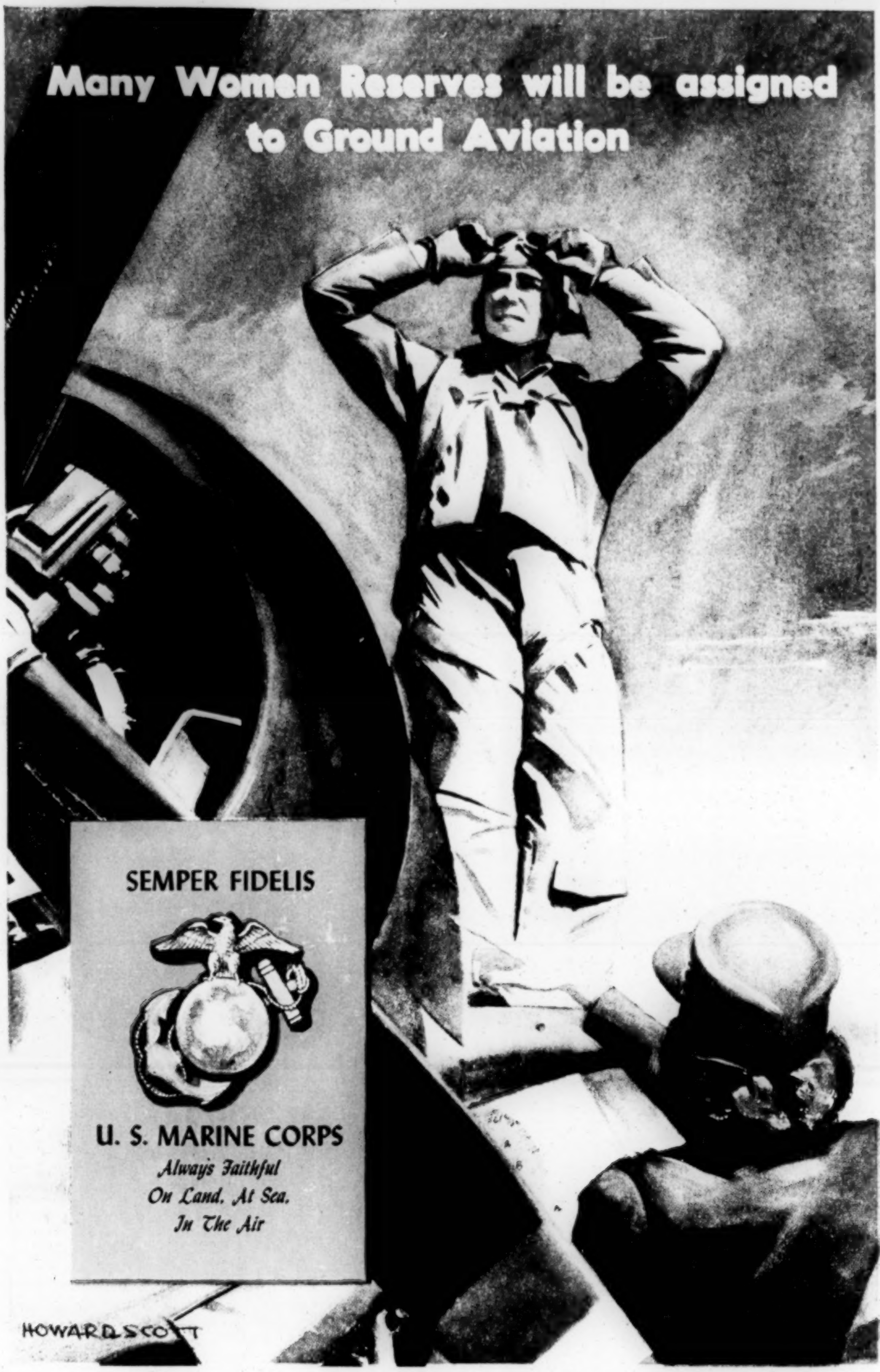
When you are stationed in centers of population where adequate housing accommodations are available, you will probably be placed on a commutation status and will find your own quarters. (See note at bottom of page 12.) At other places, where relatively large groups are assembled, such as training centers, barracks will be provided and you will live in barracks in organized military units.

Will I work with men or women?

Both. You will be working with *other Marines*—filling the place left by a man assigned to combat duty. There will naturally be a small number of women in proportion to the men.

Will I travel?

Perhaps—Marine Corps Posts and Stations are located in many different parts of the continental United States. You are subject to orders to go to any one of them.


Many Women Reserves will be assigned to Ground Aviation
SEMPER FIDELIS
U. S. MARINE CORPS
Always Faithful
On Land, At Sea,
In The Air
HOWARD SCOTT

MARITIME COMMISSION, U.S.

UNITED STATES MARITIME COMMISSION
WASHINGTON

February 15, 1943

TO ALL U. S. NAVY-U. S. MARITIME COMMISSION SHIPBUILDING
CONTRACTORS

Gentlemen:

Attached is a copy of the recommendations on women's clothing and safety appliances for shipyard work developed by representatives of ninety per cent of the American Shipbuilding Industry at the United States Navy-Maritime Commission Conference on Shipyard Health and Safety held on December 7 and 8, 1942 at Chicago, Illinois.

At that Conference, consideration of standards for women's work clothing and safety appliances formed a considerable part of the discussion.

I know that you will be interested in the recommendations contained herein. It appears desirable that as many as possible of these recommendations be incorporated in the design of garments and safety appliances made for wear by women shipyard workers.

Copy of these recommendations are being sent to clothing and safety appliance manufacturers for their guidance.

Please feel free to consult with the Safety Section of the Maritime Commission on any problems which may arise in this connection.

Very truly yours,

Daniel S. Ring

Daniel S. Ring
Director
Division of Shipyard Labor Relations

FOR VICTORY
BUY
UNITED STATES
WAR
BONDS
AND
STAMPS

Enclosure

RECOMMENDED STANDARDS FOR CLOTHING AND PERSONAL PROTECTIVE EQUIPMENT FOR WOMEN SHIPYARD WORKERS

U. S. NAVY-MARITIME COMMISSION

Head

All Yard and Hull Work Except Welding

1. Bandanna bound around head, or other close head covering that will confine hair and keep it clean, plus a safety type hat. (i.e. Hard hat, hard boiled hat, skull guard, etc.)

2. Impact Resisting Safety Goggles of the type approved by the U. S. Bureau of Standards or; if exposed to welding arcs used by other employees, then goggles with filter type lens of No. 2 - 5 shade or equivalent. The goggles should be provided with side shields.

3. Face masks of cellulose acetate may be worn in conjunction with goggles.

Welders

4. Head protection as described in paragraph 1 plus standard tilt type welders helmet fastened to the safety hat and provided with the proper shade of tinted welders glass for the job being done. All welders must wear No. 2 - 5 or equivalent of filter lens goggles with side shields under their helmets.

5. Where office employees, including plant executives, go into the yard and are exposed to welding operations tinted goggles of No. 2 - 5 shade or equivalent should be worn.

6. General
All other employees except those in offices should be urged to wear safety hats. For a worker exposed to machines, a cap must completely cover the hair. Headsize should be so generous that hat will be thrown off it it strikes a machine part. Height and stiffness are essential. Height warns the worker that her head is dangerously near machinery. Stiffness guarantees that the cap will not catch in machines. A hairnet alone is not safe.

Body

All Production Employees

1. Underwear. Weight, material and type of underwear to be worn is left to employees selection since climatic conditions will govern the choice.

All Production Employees Except Welders or Burners

2. Work clothes. The concensus of the Chicago Conference on Ship-

yard Health and Safety as to the best type of clothing for women shipyard workers is as follows:

a. A coverall type of uniform designed specifically for women but styled so that ample room for action jobs is allowed.

b. The material should be either denim or gabardine or any closely woven cotton or wool material of a weight suitable for the work done. Lighter cotton material not so closely woven may be undesirable for summer wear. Cotton material should be guaranteed not to shrink more than 1 percent.

c. Metal or plastic buttons should be provided and the buttons should be covered by a flap.

d. A drop seat should be provided and it should be securely fastened across the top, preferably under a flap or belt that will close the opening when it is buttoned.

e. Color is optional but a market preference has been shown for khaki. All dyes used must be fast.

f. Dress shields should be made available either separately, or built into the garment. If built into the garment they should be easily removed for laundering or replacement.

g. The trouser legs should be cuffless and there should be provision made for smoothly binding the bottom of the trouser leg about the ankles, preferably by means of a cross strap and a buckle, button or snap. The binding method should be such that there will be no gathers about the ankle.

h. There shall be no turned cuffs on the sleeves and the sleeves shall fit closely at the wrist.

i. All seams shall be flat seams.

j. Pockets shall be flat pockets only. There shall be no breast pocket.

k. The coverall should be designed to close at the neck.

l. There shall be no ornamentation such as puff type shoulders, extended or standing collars or neck pieces. There should be nothing that will tend to snag on objects or be caught in moving machines.

m. A belt may be used at the waist but it should be designed as an integral part of the garment and so there will be no free ends which may be caught by moving machinery.

Welders

3. Welders' garments should include a flame proofed coverall as described above or a two piece outfit consisting of wool trousers and shirt plus a flame proofed welder's leather set. Design of garments should include:

Wool Trousers

a. The wool trousers should be closely woven and should be styled to fit a woman's figure with ample room allowed for action jobs.

b. Flat seams and pockets should be provided.

c. There may be a drop seat provided or the trousers may open at the side.

d. If the garment is designed with a belt, the belt hangers should be at least 1 and 1/2 inches wide and the belt should be an integral part of the trousers.

e. If the garment is designed as a bib type overall substantial shoulder straps should be provided.

f. No cuffs should be provided at the bottom of the legs and the trousers should be designed so that they can be wrapped smoothly, without gathers, around the ankle if desired. A cross strap with a buckle, snap or button is preferable.

Wool Shirt

a. The wool shirt should be closely woven and styled to fit the feminine figure.

b. It should be of a closed neck type or turtle neck design.

c. There should be no breast pocket.

d. There should be no rolled cuffs on the sleeves and the sleeves should be closely fitted at the wrist.

e. If available, wool sweat shirts may be worn.

Welders Leathers

4. Welders Leathers should be the same as men's leathers except that they should be styled to fit the feminine figure. Experience indicates the necessity for extra ventilation in welders jackets.

Burners and Oxygen-Acetylene (Gas) Welders

5. Wool shirt and trousers, or flame proofed cotton shirt and trousers, meeting the specifications as shown for Section 3 - Welders.

Hands

All Production Workers Except Welders and Burners.

1. Gloves of material suitable for the work being done such as cotton, canvas, leather, leather palms and with or without gauntlets.

Welders and Burners

2. Leather gloves with gauntlets, but provided with an elastic wristlet, set one-third the distance from the top of the gauntlet, that will closely circle the wrist above the bottom of the shirt cuff, and prevent the entrance of hot slag into the glove.

Feet

All Employees

1. Rugged safety shoes made of leather comparable to that used in men's shoes, and provided with steel or plastic toe caps and including:
   a. Low heels.

   b. Oxford types for general employee wear and high shoe types for welders and burners. Pull on boots with a strap across the instep are also suggested

   c. Leather or cord type soles and heels.

   d. Safety shoes should comply with the American Standard Code entitled Protective Occupational Footwear.

FORM 3106

✓

UNITED STATES MARITIME COMMISSION

TO: Miss Neinberg

FROM: Director, Division of Shipyard
Labor Relations

These are sent in line with our recent telephone conversation.

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War -
Maritime
Comm

UNITED STATES MARITIME COMMISSION

REGIONAL HEALTH CONSULTANTS

December 1942

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December 1942

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The above names were sent to WB by Mr. D. S. Ring, Director, Division of Shipyard Labor Relations, U. S. Maritime Commission.

MATERNITY CARE & EMPLOYMENT OF mothers IN industry
1942

STANDARDS FOR MATERNITY CARE AND EMPLOYMENT OF MOTHERS IN INDUSTRY

Prepared in July 1942 by THE CHILDREN'S BUREAU AND THE WOMEN'S BUREAU OF THE U. S. DEPARTMENT OF LABOR, *in consultation with—*

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GENERAL STATEMENT

With increased employment of women in industry, the problem of protection of the pregnant woman and her child has become more urgent. Many inquiries have come to the Women's Bureau and to the Children's Bureau from a variety of sources, such as employers, workers, and health departments, concerning the types of work suitable for pregnant women and the policy of maternity leave. The labor situation in this country does not necessitate the recruitment or employment of pregnant women or women with infants. A woman who is expecting a child should give first consideration to her own health and to plans for safeguarding the health and care of the child. Because some women who are pregnant or who have young children may find it necessary to work, the following statement of policy has been formulated to serve as a working basis for those concerned with this problem. It is recognized as a general policy that provisions for maternity care and leave should not jeopardize the woman's job nor her seniority privileges.

EMPLOYMENT POLICIES AND CARE FOR PREGNANT WOMEN

These recommendations are based on the premise that to safeguard the pregnant women who works certain special provisions should be made. She should have opportunity for adequate prenatal care. She needs sufficient time off before delivery to allow her to be in a rested state at the time of delivery and to prevent undue strain in the latter part of pregnancy. If she is employed in certain occupations that involve hazards or strain, or if complications of pregnancy occur, she needs special consideration. It is not possible to lay down hard and fast rules that will fit every situation. The wide variation in general physical condition and in the amount of home duties performed outside working hours necessitates some individualization of arrangements for maternity leave and protection.

The following general recommendations are made as a guide:

1. Facilities for adequate prenatal medical care should be readily available for all employed pregnant women; and arrangements should be made by those responsible for providing prenatal care, so that every woman would have access to such care. Local health departments should make available to industrial plants the services of prenatal clinics; and the personnel management or physicians and nurses within the plant should make available to employees information about the importance of such services and where they can be obtained.

2. Pregnant women should not be employed on a shift including the hours between 12 midnight and 6 a.m. Pregnant women should not be employed more than 8 hours a day nor more than 48 hours per week, and it is desirable that their hours of work be limited to not more than 40 hours per week.

3. Every woman, especially a pregnant woman, should have at least two 10-minute rest periods during her work shift, for which adequate facilities for resting and an opportunity for securing nourishing food should be provided.

4. It is not considered desirable for pregnant women to be employed in the following types of occupation, and they should, if possible, be transferred to lighter and more sedentary work.

a. Occupations that involve heavy lifting or other heavy work.

b. Occupations involving continuous standing and moving about.

5. Pregnant women should not be employed in the following types of work during any period of pregnancy, but should be transferred to less hazardous types of work.

a. Occupations that require a good sense of bodily balance, such as work performed on scaffolds or stepladders and occupations in which the accident risk is characterized by accidents causing severe injury, such as operation of punch presses, power-driven woodworking machines, or other machines having a point-of-operation hazard.

b. Occupations involving exposure to toxic substances considered to be extra hazardous during pregnancy, such as:

Aniline.
Benzol and toluol.
Carbon disulphide.
Carbon monoxide.
Chlorinated hydrocarbons.
Lead and its compounds.
Mercury and its compounds.
Nitrobenzol and other nitro compounds of benzol and its homologs.
Phosphorus.
Radioactive substances and X-rays.
Turpentine.
Other toxic substances that exert an injurious effect upon the blood forming organs, the liver, or the kidneys.

Because these substances may exert a harmful influence upon the course of pregnancy, may lead to its premature termination, or may

injure the fetus, the maintenance of air concentrations within the so-called "maximum permissible limits" of State codes, is not, in itself, sufficient assurance of a safe working condition for the pregnant woman. Pregnant women should be transferred from workrooms in which any of these substances are used or produced in any significant quantity.

6. A minimum of 6 weeks' leave *before* delivery should be granted, on presentation of a medical certificate of the expected date of confinement.

7. At any time during pregnancy a woman should be granted a reasonable amount of additional leave on presentation of a certificate from the attending physician to the effect that complications of pregnancy have made continuing employment prejudicial to her health or to the health of the child.

EMPLOYMENT POLICIES AND CARE FOR THE MOTHER AND INFANT AFTER DELIVERY

To safeguard the mother's health she should be granted sufficient time off after delivery to return to normal and to regain her strength. The infant needs her care, especially during the first year of life. If it is essential that she return to work, the following recommendations are made:

1. All women should be granted an extension of at least 2 months' leave of absence after delivery.

2. Should complications of delivery or of the postpartum period develop, a woman should be granted a reasonable amount of additional leave beyond 2 months following delivery, on presentation of a certificate to this effect from the attending physician.

MIGRATORY WORKERS

49

49
Bul. #198

UNITED STATES DEPARTMENT OF LABOR
FRANCES PERKINS, Secretary
WOMEN'S BUREAU
MARY ANDERSON, Director

EMPLOYMENT AND HOUSING PROBLEMS OF MIGRATORY WORKERS IN NEW YORK AND NEW JERSEY CANNING INDUSTRIES, 1943

BULLETIN OF THE WOMEN'S BUREAU, No. 198

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1944

For sale by the Superintendent of Documents, Washington 25, D. C. - - - Price 10 cents

LETTER OF TRANSMITTAL

UNITED STATES DEPARTMENT OF LABOR,
WOMEN'S BUREAU,
Washington, December 15, 1943.

MADAM: I have the honor to transmit a report on problems arising from the wartime necessity of employing migratory workers in New York and New Jersey canneries.

The report is not statistical; instead, the chief emphasis in the survey was on the problems of the firms in the employment and housing of migrant labor. Workers had been brought from several southern States, and even the West Indies, in numbers greater than ever before; in addition, the use of school children, college students, and teachers was general, as was the employment of holiday workers.

Practically all the canneries visited were processing food for some branch of the armed forces or for Lend-Lease.

The survey was conducted and most of the report was written by Helen Bryan Sater. The sections on employment, hours, and wages were written by Caroline Manning.

Respectfully submitted.

MARY ANDERSON, *Director.*

HON. FRANCES PERKINS,
Secretary of Labor.

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Employment and Housing Problems of Migratory Workers in New York and New Jersey Canning Industries, 1943

INTRODUCTION AND SCOPE

Because of the large numbers of women involved, facts surrounding the employment of women in canning and food-processing industries have been of continuing interest to the Women's Bureau of the United States Department of Labor. Its studies of these industries, or its State surveys that have given considerable attention to these industries, range from one on fruit-growing, canning, and preserving in the State of Washington in 1923 to the most thorough survey ever made of the canning and preserving of fruits and vegetables, which extended to 16 States and was made public in 1940.

After the entry of the United States into the present war it was considered important by the Women's Bureau to know what changes were taking place in an industry employing so large a percentage of women and one that is so vital to the war effort. Since women have been and probably will continue to be the largest source of labor supply for canneries, it would be especially unfortunate to accept for an emergency period an unnecessary lowering of standards, particularly inasmuch as canneries, as a whole, are regarded as having standards lower than those obtaining in many other industries. The war should not be used as a pretext for lowering standards when the situation does not warrant it. Canners are in a better position financially than ever before to improve working conditions within the plant and living conditions for migratory workers. The Office of Price Administration has made generous allowance for the increase in labor costs to canneries, and in spite of ceiling prices canners' incomes are greatly augmented by large Government orders.

As a preliminary, studies were made during the summer and fall of 1943 of canneries in New Jersey and New York. Data were gathered covering kinds of foods processed; number of weeks of cannery operation; wages, hours, and working conditions. Emphasis was put on obtaining information with regard to the extent and percentage of woman employment; sources of labor supply and methods of its recruitment; and the problems surrounding the use of migratory labor.

The information was secured through visits to plants and to migrant-housing locations, and from interviews with representatives of plant management and of canners' associations, officials of Federal and State agencies, representatives of private agencies, union officials, and individual workers. The facts gathered were not intended for a statistical report. Some plant records were studied but no pay rolls were copied. A total of 57 canneries were visited. Twenty-one of these were in New Jersey and thirty-six were in New York.

PRODUCTS

The products of the canneries visited in New Jersey included seasonal, nonseasonal, dehydrated, and frozen foods; New York canneries included, in addition to these, two apple-drying plants.

New Jersey.

At first glance the canning industry in New Jersey appears to be a tomato-canning industry. No other product approaches the tomato in number of canneries reporting; the vegetables ranking second and third, asparagus and green beans, were reported by 5 and 4 plants, respectively, while 19 of the 21 plants canned tomatoes or tomato products. Eight products—peas, lima beans, corn, squash, spinach, turnips, sweet potatoes, and peppers—were canned in 1 plant each.

Other products of the plants surveyed cover a wide variety, ranging from soups, chowders, and the ubiquitous baked bean, through such things as hash, stews, army rations (meat and vegetables combined), condiments of every description, to wines, olives and olive oil, honey. Two plants dehydrated potatoes; one froze vegetables. Few fruits appeared among the products reported.

Practically all plants processed more than one product; one listed 12 products, and another 19.

New York.

The 36 plants visited in New York also had a great variety of products. Tomatoes or tomato products, though outranking all others (being reported by almost two-thirds of the plants), were followed by green beans, canned by half the companies, and peas, canned by more than two-fifths of them. Beets as well as potatoes were dehydrated; fruits as well as vegetables were frozen. The range was from soup to coffee, from baby food to army rations.

Only two plants restricted their output to one product. Most of them reported from 4 to 8 products, but four listed 10 or more, the highest turning out 16.

Government Orders.

Practically all the canneries visited were processing food for some branch of the armed services or Lend-Lease. It was not possible for all the companies to estimate the exact percentages of their products going to the Government. Some of them had not yet received their contracts. For those that had, the percentage frequently was based on the output of the year before and was contingent on the weather and the crop yield as well as the demands made by the Government, which might change from day to day.

SOURCES OF LABOR SUPPLY AND ITS RECRUITMENT

The large contracts for food for men in the armed services and for Lend-Lease made the need for workers in the canning industry greater this past season than in normal times. That there should be a shortage in the usual labor supply of cannery workers was inevitable. That it has become important to induce greater numbers of women to step into this breach is a matter that the Women's

Bureau recognizes. Women have been taken on in New Jersey and New York canneries to replace men, casual as well as regular workers, who have been drawn into military service, and to replace men and women who have left for better-paying jobs in industries offering continuous employment.

The greatest need for additional workers was not realized, however, this summer. The drought in New Jersey that lasted from June all through the summer greatly reduced the crop yield, while continuous rains in New York State prevented early planting of peas, and frost practically ruined the New York peach crop.

It had been anticipated that more peelers, especially, would be needed in plants canning whole tomatoes, since Government contracts for this commodity were enormous, and because several products, such as pork and beans and others using large quantities of tomato pulp, puree, and paste, for which unskinned tomatoes are used, had been eliminated by the War Production Board. Visits to plants disclosed, however, that some of the plants were not canning whole tomatoes as they had done heretofore, but, because of the shortage of labor, were doing those processes that do not take so large a force.

Efforts to fill the labor requirements were met in part by the greater use of housewives from the surrounding farms and communities, many of whom had never worked in canneries before. The use of school children[1], college students, and teachers was general. In New York State in particular, use was made of holiday workers, recruited both locally and from New York City. Attendants at a church youth conference worked two weeks at a time to harvest crops and some of these same people helped in nearby canneries. Workers in other industries and office employees were used for "Victory" or part-time shifts. In one community where the canners were unwilling to operate short evening shifts, women and men who worked on night shifts in defense plants were taken for a minimum 6-hour day shift in canneries. It occurred to the Women's Bureau agent that two manufacturers producing nonessential goods, who were having a difficult time getting enough material to run full capacity since there was not a normal demand for their products, might be willing to loan their employees to a canner in the peak canning season. The two manufacturers were delighted to make such an arrangement; they had held on to their help because of the fear that if they let it go for short periods they would not get it back.

In the course of the study, a number of methods that had proved successful elsewhere in the recruitment of labor were suggested. For example, soldiers, sailors, and coast guardsmen had been called in to aid the New Jersey canners in saving the tomato crop; and in northwestern New York State soldiers and sailors had answered a call for help and worked in canneries at the peak season. A greater use of migratory workers had helped to meet the labor needs. Workers were brought from Florida, Kentucky, Tennessee, West Virginia, and other southern States in numbers far exceeding those of earlier years. They included white and colored unattached men and women and family groups of men, women, and children. Hundreds of Jamaicans and workers from the Bahaman Islands were brought in as farm labor, and some worked in canneries where there was need.

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[1] The New Jersey State law covering the employment of children has been modified to allow minors as young as 16 to be employed in commercial food canneries to the full maximum of 10 hours a day and 48 hours a week and up to 11 p. m., between May 1 and October 1, without any dispensation from the Commissioner of Labor.

Recruitment methods included efforts on the part of cannery employees to bring in their relatives and friends. Private employers had their own scouts on the lookout for both local and migrant labor. In some instances representatives of cannery workers' unions assisted the recruitment program. In Fredonia, N. Y., where there was no United States Employment Service, through the coordinated efforts of the local agencies concerned a voluntary office operated for the recruitment of farm and cannery labor. The salary of the man in charge was paid by one of the canners but the office was largely staffed by volunteers. Practically all the canneries visited made use of the United States Employment Service. The Service found it difficult at times to fill these orders, not only because of labor shortage but because in some cases the canners did not order labor early enough for the demands to be met.

Recruitment by Government agencies was handled somewhat differently in New Jersey and New York. In New Jersey the Extension Service of the Department of Agriculture recruited farm labor and the Employment Service of the War Manpower Commission recruited cannery labor. In New York State there was a closer cooperation between these two agencies, the Employment Service recruiting farm as well as cannery labor and the Extension Service depositing money for the use of the Employment Service in defraying expenses entailed in the recruitment of farm labor. One handicap in this practice is that since all States do not have this arrangement, there may be delay by the Employment Service of clearance orders in the States where recruiting for farm labor is being done, as the Employment Service there may be recruiting cannery labor only.

Advertising for workers was done through newspapers and over the radio. House-to-house canvassing was undertaken. Talks by workers, employers' representatives, and employees of the United States Employment Service were made to various groups. Those most frequently contacted in the effort to get women workers were settlement houses, Y. W. C. A. mothers' clubs, church groups, unions, American Legion women's auxiliaries, American and British selectees mothers' clubs, and societies of colored people.

Many of the migrant workers talked with were dissatisfied because the promises made to them when they were recruited, with regard to work, earnings, housing facilities, and so forth, had not been kept. The result was that many of these workers moved to other places or went home. The expense of such turn-over to the industry is an important item and the dissatisfaction of the workers may affect their availability another year.

There was said to be a practice in one locality to give women enough employment to entitle them to unemployment insurance and then discourage them from taking other regular jobs so that they would be available to canners in peak season. In this same locality, one canner was said to make a practice of hiring and firing women in quick succession in the slack period just prior to the peak season, giving them the impression that they were "frozen" in cannery jobs and thus making them available for the peak season.

EMPLOYMENT

Seasonality of Product.

Because canning is a seasonal industry, the number of weeks of plant operation during the year varies from plant to plant, and the number of employees in any one plant varies from week to week according to the kind and the amount of food to be processed.

Altogether 19 canneries in New Jersey and 35 in New York reported on employment and on the seasonal nature of the crops processed. Though more canneries were visited in New York than in New Jersey, employment at the peak season totaled a few thousand more in New Jersey than in New York. In each State approximately one-half of the canneries worked solely on seasonal products, but only one-fifth to one-fourth of all employees were found in these canneries.

The proportion of women among total employees at the peak, slightly more than one-half, was practically the same in both States. However, the proportion of women in the canneries engaged solely in seasonal operations was decidedly different. That it was 20 points lower in New York is due in part to the greater importance of the pea and bean crops in that State, crops the processing of which uses few women. In 6 canneries in New York the proportion of women employed at the peak of the pea or bean season ranged from 10 to 33.3 percent. At the other extreme there were several individual plants in which three-fourths or more of the employees were women.

The detailed figures follow:

Type of product	Number of canneries reporting	Number of employees at peak season		
		Total	Women	
			Number	Percent
	New Jersey			
Total	19	15,628	8,258	52.8
Seasonal only	10	3,289	2,064	62.8
Seasonal and nonseasonal	9	12,339	6,194	50.2
	New York			
Total	35	12,014	6,293	52.4
Seasonal only	16	3,076	1,307	42.5
Seasonal and nonseasonal	19	8,938	4,986	55.8

Length of Season.

Canning operations were limited to periods of not over 13 weeks (3 months) in almost one-third of the canneries in New Jersey and in New York. Few crops were processed in these short-term operations; for example, one plant operating about 4 weeks canned only cherries, another operating about 6 weeks canned only tomato products, another operating 10 weeks canned two crops, peas and beans, and another operating 11 weeks canned three crops, beans, tomatoes, and raspberries.

In another significant group of canneries in each State, operations continued for 14 to 26 weeks (3 to 6 months). Most of the canneries that operated longer than 17 or 18 weeks also processed nonseasonal products, thereby prolonging the canning period to 5 or 6 months. However, operations of some of the New Jersey canneries that began the season with strawberries and asparagus and continued through the various succeeding crops, ending with pumpkin and cranberries, covered from 5 to 6 months processing only seasonal vegetables or fruits.

Eight canneries in each State operated throughout the year, though at times with only a skeleton force. In New Jersey this number represents almost half of the canneries that reported; in New York less than one-fourth. Needless to say, in order to operate throughout the year they process not only the usual seasonal vegetables and fruits but other nonseasonal products such as jellies, jams, pickles, baked beans, and soups.

In New York State the canneries that operated over short periods employed for the most part few workers, rarely over 200 and occasionally less than 100 persons at the peak season. On the other hand, all but one of the year-round plants employed 200 or more persons, three-fourths of them at least 500, and more than a third of them as many as 1,000.

Number of weeks in operation	Number of canneries reporting	Number of canneries reporting employment at peak season as—				
		Under 100 persons	100 to 199 persons	200 to 399 persons	500 to 999 persons	1,000 persons and over
	New Jersey					
Total canneries	18	4	4	4	3	3
13 and less	5	1	1	2	1	
14 to 26	4	1	2			1
27 to 39	1		1			
52	8	2		2	2	2
	New York					
Total canneries	35	5	10	12	4	4
13 and less	11	2	7	1	1	
14 to 26	13	2	3	7		1
27 to 39	3			3		
52	8	1		1	3	3

The distribution in New Jersey is not so clearly defined. As many of the year-round plants had less than 400 employees as had more than this number; and among those on short-time operations of only a few weeks or months, numbers employed were scattered from less than 100 to 1,000 or more.

Summary.

Of 21 canneries surveyed in New Jersey, 19 reported their employment. The figures aggregated 15,628, of whom 8,258 (53 percent) were women. All but 1 of the 36 New York canneries reported employment; these had 12,014 workers, of whom 6,293 (52 percent) were women.

Of the 18 New Jersey canneries reporting on length of season, 8 operated throughout the year; 5 operated for 3 months or less, 4 from over 3 to 6 months, and 1 from over 6 to 9 months. Of the 35 New York canneries that reported, 8 operated the year round; 11 operated 3 months or less, 13 from over 3 to 6 months, and 3 from over 6 to 9 months.

OCCUPATIONS NEW TO WOMEN

The jobs customarily done by women in canneries are in the preparation of fruits and vegetables, such as sorting, peeling, trimming, feeding machines, and working on the can line. In many canneries women were employed on jobs previously done in those plants by men and boys; though these same occupations were customarily done by women in other plants, they were new for women here.

Outstanding among these occupations new for women were processing jobs involving the control of retorts and of pulping, extracting, evaporating, and scalding equipment, as well as the more usual jobs of operating the filling and closing machines. Some women were doing heavy labor such as unloading cars, handling cases weighing from 15 to 42 pounds, handling bushel baskets filled with produce. Others were employed as general laborers feeding cans, salvaging cans, shaking sacks, and as conveyor and bell attendants. A new job for women in one plant was putting glass jars in retorts.

In the manufacture of containers women were employed for the first time in one or two plants as box-machine operators and in making cases, as well as operating shears, various presses, and coating equipment.

In some canneries women were used in place of men in packing cases, hand and machine labeling, stenciling, and strapping.

As maintenance and miscellaneous workers they were employed as janitors, elevator operators, truckers, directors of shed and yard traffic, and to clean and grease machines.

A few women had been taken on as laboratory assistants. Even as clerical workers, the employment of women in factory departments as timekeepers, production workers, and weight checkers was an innovation.

HOURS OF WORK

As previously stated, this study is concerned chiefly with working and living conditions, and not with statistics such as wages and hours. However, during the interviews with management, wage policies and hourly rates of pay were discussed, as well as the irregularity in hour schedules in canneries.

Hours of work and wages paid in the canneries are controlled to some extent by Federal laws, and in New York the State hour law for women also regulates employment. The New Jersey statutes provide no such regulation.

Though the Federal Fair Labor Standards Act does not directly limit the hours of work, in providing for overtime pay for work performed beyond a certain point it does indirectly set a control of work hours. In the case of the canning industry, however, exemptions practically nullify the usual standards of the Act. In the first place, since the overtime-pay provision may be set aside for an aggregate of 14 weeks in this industry, the law provides no check to unlimited hours during this period. In the second place, for another 14 weeks overtime pay is required only after work continuing beyond 12-56 hours. Since peak seasonal operations rarely extend beyond 28 weeks, the total for which special exemptions are allowed, it is apparent that the law has little effect in restraining the all too prevalent tendency to long hour schedules in canneries.

The Federal Act is the controlling factor in New Jersey, but in the case of New York provisions of the State hour law complicate the situation, as the Federal Act in no way excuses noncompliance with State standards.

In contrast to the Federal Act with its allowance for exemptions for 28 weeks for men and women, the State law for women employees makes special provision for canneries from June 15 to October 15, a period of approximately 17 weeks. During this period the maximum hours are set at 10-60 but during the 6 weeks from June 25 to August 5, 12-66 hours are permitted in emergency, a striking departure from the 8-48-hour standard for the remainder of the year. The 6-day week restriction remains in effect in emergencies.

Practically half of the New York canners stated that they had taken advantage of the 60 and 66 hours provisions of the State act, though others had not exceeded the 56 hours allowed by the Federal Act for the second period. Moreover, the situation was confused by action taken according to the provisions of the New York War Emergency Act, which give the Industrial Commissioner authority to relax the labor laws in the interests of maximum war production. Several dispensations were made to individual canners, some permitting employment for 10 hours a day after October 15.

Though irregular hours and hours longer than the accepted standard may be unavoidable in canneries, due to weather conditions, crop yield, and the seasonal character of the industry, they should not be so long as to affect the health or the efficiency of the worker. Where an emergency makes overtime work necessary, some compensating time off should be given the worker directly before or following the long hours worked.

Hour recommendations of the Women's Bureau are that women's hours do not exceed 8 a day and 48 a week, with a week of 40 hours in normal times; that women should not work longer than a 5-hour stretch without a lunch period; that 10-minute rest periods should be given half-way through each work spell, which improves the workers' efficiency and increases production; and that one day's rest in seven should be the rule for each individual even in times of emergency.

New Jersey.

Statements on the length of the workday were made by 19 of the New Jersey canners interviewed. Maximum hours at the peak of the season were admittedly high in a number of instances. Though in 7 canneries the workday was kept at 8 or 9 hours even at the peak, in the other canneries it was said to be 10, 11, 12, 13, and even 16 hours long. As one canner commented, "In tomato season we sometimes work 12 hours a day, 6 days a week," and another said, "Sometimes the women work 15 and 16 hours a day for 6 days a week."

Five of the canneries made use of a second shift of workers, which should have eliminated the excessively long hours resorted to when only one shift is employed. As a matter of fact, however, in 2 of these the day's schedule was 10 or more hours for each shift. Four of these two-shift plants operated throughout the year on seasonal or nonseasonal products, though sometimes with only a skeleton force. In most cases the second shift was necessary only during the peak harvest time of perishable crops.

While the hours of work varied and often were extremely long in the busy season, the usual hours at other times of the year were 8 or 9 a day. One canner, who operated the year round, did report that the usual schedule for his plant was 10 hours a day.

A few canners reported that when women work overtime until 9 and sometimes 11 o'clock at night or even later, an effort is made to give them compensating time off during the week, and preferably the following day unless an abnormal amount of produce is delivered to the cannery on that day.

The long hours must have been particularly difficult for housewives, who were employed in large numbers in every cannery and many of whom were not young.

New York.

In about two-thirds of the 34 New York canneries reporting on hours, including those operating short seasons and the year-round plants, the usual workday was 8 hours; 6 reported a 10-hour day and 1 seasonal plant stated that a 12-hour day was usual. In the rush of the harvest peak, however, work hours were another matter. In the peak season only 3 canneries adhered regularly to their 8-hour schedule, while in 20 women worked frequently in excess of 10 hours; in fact, 19 canneries, including one-half of the year-round group, reported maximum daily hours as long as 12, and in 6 seasonal establishments women worked as many as 13, 14, and 15 hours a day. In these plants at such times, following the usual 9- or 10-hour day work dragged on for 4 to 6 hours after supper. One canner said that work continued from 7 a. m. to whatever hour was necessary to take care of the produce on hand; on one occasion it was 2 a. m. when they quit. Another said, "When peas come in heavy we work from 9 or 10 a. m. to midnight, and on peak days for beans and corn from 8 a. m. to 10 p. m." Such situations undoubtedly are typical of the irregularity and long hours in this industry. In a few instances plants operated a second shift during the busiest season in lieu of long overtime hours.

Summary.

Hours of work in canneries, uncontrolled by State law in New Jersey and liberally exempted from the State law in New York, run to extremes at peak season. In New Jersey the usual hours at other times of the year are 8 or 9 a day, but emergency hours were reported variously as reaching from 10 to 13, and even 16 hours, for 6 days a week. In New York the most usual daily hours over the year are 8, but peak-season hours were reported as from 12 to 15, only 3 plants adhering to their 8-hour schedule.

CANNERY WAGES

In the canning industry so many employees work on piece rates based on quantity production that hourly wage standards cannot be used as a criterion of actual earnings of the majority of the women employed during the short seasons in many of the canneries.

A cannery survey by the Women's Bureau that included the 1939 earnings of employees showed that from one-third to more than one-half of the women working on various products in New York canneries in 1939 were earning not more than 25 cents an hour. At that time 25 cents was the minimum set by the Fair Labor Standards Act, but in October 1939 the rate was raised to 30 cents, the minimum still in effect throughout the season of 1943. Though as early as March 1943 the Industry Committee for Canned Fruits and Vegetables and Related Products, acting under the Fair Labor Standards Act, recommended a 40-cent minimum rate for canneries, this rate was not made effective until October.

The summer of 1943, however, was one of unusual confusion and agitation for higher wages. To meet the competition of earnings, especially in war industries, many canners were forced to raise their wage scales, and in June 1943 the Director of Economic Stabilization authorized an increase for cannery workers provided it did not exceed 10 cents.

In the New York and New Jersey survey by the Women's Bureau in 1943, no canner reported hourly rates below 40 cents.

Further adjustment of the wages of cannery workers may be needed to meet the increase in the cost of living and to enable canners to secure an adequate labor supply. Some way must be found to insure against a return to the substandard wages paid women cannery workers before wartime needs compelled improvement in this situation.

That wages should be paid on the basis of occupation and not on the basis of sex is a Women's Bureau principle as old as the Bureau itself. Further, the matter of seasonal or nonseasonal employment should make no difference to the rate. The recommendation that where women are employed on jobs still done or formerly done by men and are turning out substantially the same work, women's wage rates should be the same as men's, has been enunciated by Federal Government agencies for the past 40 years.

Women in New Jersey.

For the most part women were classified as laborers in the New Jersey canneries, and 17 canners reported hourly rates of pay for such seasonal workers. Five were paying 40 cents an hour, but the most usual rate for seasonal labor was 45 cents, and only three canners paid more than 45. Fifty cents an hour was the maximum hourly rate paid to seasonal women laborers.

Higher rates usually were paid to the more regular force of year-round laborers, though frequently the seasonal workers, who in many cases return year after year, were doing the same kind of work as that done by the more regular workers in the year-round canneries. Of 7 canneries that operated throughout the year and reported rates only 2 quoted a rate above 45 cents for their seasonal workers, and none quoted a rate below 45 cents for their more regular workers. The highest rate for women regular workers was reported as 52½ cents.

Aside from hourly rates for labor, a few managers quoted rates for specific occupations such as machine operators and foreladies. Though two of the very few foreladies reported were rated at 45 cents, other foreladies and the machine operators referred to were rated at from 55 to 67 cents an hour, the highest hourly rates reported as paid to women in the New Jersey canneries.

In one cannery that operates 52 weeks of the year, employees were paid on a definite production-bonus basis, and in many canneries certain types of work were paid on a piece-work basis. Pay for output instead of hours was especially common in tomato peeling.

One New Jersey canner, whose plant operated throughout the year, reported a system of automatic wage progression based on length of service.

In some of the organized plants in New Jersey the union has no responsibility for the seasonal workers. In a union agreement in effect at the time of the survey, a seasonal employee is defined as one who is hired between July 15 and October 15 of any year, and the contract specifically states that seasonal workers are excluded from the coverage of the agreement.

Women in New York.

Women laborers were paid at the rate of 40 cents an hour in only 3 of the New York canneries covered in this survey, and these were in nonindustrial communities remote from the influence of the higher wage scale paid in war-industry plants. Furthermore, 2 of them were dependent to some extent on migrant workers, and all operated over comparatively short periods. In an outstanding majority of the canneries, 29 of the 36 reporting, the labor rate of the women was 50 cents; in only 1 cannery was it higher and there it was 55 cents. The 50-cent rate predominated in canneries operating on a seasonal as well as on a 52-week basis, but no cannery operating throughout the year reported a labor rate of less than 47 cents.

Customarily, rates for machine operators and foreladies were higher than the rates for labor, though these better-paid jobs were in a decided minority and less than one-third of the canners reported rates for specific jobs. In only 2 cases were rates reported for such occupations as low as 50 cents; 55 cents was the most common rate and a few were reported to be as high as 60 cents.

Additions in the way of a bonus or incentive payments were rare. One cannery reported the payment of overtime above 40 hours. Two plants operating throughout the year had definite automatic wage-progression systems; another paid a bonus for work on the second shift, and others raised the usual hourly rate for work during the apple season.

Rates for Men.

Rates of pay for men in the labor classification were invariably higher than those for women. Only one canner in New Jersey reported a labor rate for men as low as 40 cents an hour. This was a small rural plant, remote from the competition of higher-paying industries, and all the women employed here were paid on a piece-work basis. The prevailing hourly rate paid men was the same in New Jersey and New York. Six of the 9 canners reporting men's rates in New Jersey, and 23 of the 29 reporting them in New York, paid 60 cents an hour. In only 2 canneries was the men's labor rate more than 60 cents, the maximum being 68 cents paid in a cannery operating 52 weeks in New York State.

Summary.

For the most part women's seasonal work in canneries is classed as labor. In many plants it is paid on a piece-rate basis, and no data were obtained as to earnings. Production bonuses are rare, as are systems of wage progression.

In the case of hourly workers, no canner in either State reported a rate below 40 cents. In New Jersey the most usual rate was 45 cents; 3 canners paid more than this with 50 cents the maximum. In 29 of the 36 New York canneries women laborers' rate was 50 cents; in 1 it was 55 cents.

Men's rates were higher than women's, their prevailing rate in both States being 60 cents.

WORKING CONDITIONS

As regards working conditions in the canneries of New Jersey and New York, each presents its own individual problems, the remedies for which cover a wide range. Some few companies would need entirely new plants or buildings before conditions could be made satisfactory. For others it would mean new equipment or machinery or the realignment of production lines. Still other situations could be remedied by the use of paint, better lighting, more seats for women, and so forth. It is true, nevertheless, that plant outlay and working conditions in the canneries of these two States have been decidedly improved in recent years. There are fewer "fly-by-night" canneries, the kind that would spring up in some old barn or abandoned cannery, operate a year or two, and then move elsewhere or go out of business. Several small plants and chains of canneries have been bought by large food corporations that are better able financially to improve and maintain them.

Canners are approaching the problems of production and of working conditions more scientifically. They point with pride to new machines and to new production methods. One small cannery visited had unusually good mechanized equipment and a minimum of hand labor for the amount of food processed. As a consequence the owner was having little difficulty in securing the small number of workers needed. In a community where there were several canneries it was interesting to note that two canneries having good working conditions were having no trouble getting labor, while one with a long-time reputation for bad working conditions was finding it almost impossible to get help.

Much credit is due the Association of New York Canners for this more progressive attitude. This organization has recognized certain standards for working conditions and has urged the canners of the State to maintain them. In cooperation with the offices of the War Manpower Commission in Buffalo, Rochester, Syracuse, and other cities of northwestern New York, as well as the local United States Employment Service offices in cannery areas, the association has done a splendid job of recruiting cannery workers and has observed fair practices in so doing. During the less busy winter season, the Canners Association plans to assemble material on good housing for migratory workers and make this available in usable form to canners who may desire or need it.

The practical studies made by the Division of Women in Industry in the New York State Department of Labor in 1930-31 undoubtedly have had much to do with the changed attitude and practices of many New York canneries, several of which mentioned these studies in the present survey. The studies were made in cooperation with the Canners Association and were concerned especially with the kinds of jobs for women in canneries and with better production methods. The studies resulted in a new cannery code for the State, which is administered by the Inspection Division of the Department of Labor.

General Plant Conditions.

Canneries vary as to type of construction from large brick and concrete buildings of several stories, usually in cities or towns, to the less pretentious frame buildings, barnlike in appearance or of pavilion-type construction.

With some notable exceptions, the canneries visited, though in few cases housed in new buildings, are kept in good repair and generally appear freshly painted on the inside.

Lack of ventilation is not a problem for the most part, but for the buildings of platform or pavilion type too much ventilation and too little protection from cold or wet weather is the case. A bad feature of several plants is the use of basement workrooms that are dark and damp. In a few canneries steam condenses on the ceiling and drops on the workers.

Daylight is plentiful in most canneries on bright days but in many of them the artificial lighting for dark days is not adequate. The usual method of such lighting is by bulbs suspended on cords over the production lines or machines. These frequently are spaced too far apart, of insufficient voltage, and so dirty that much light is lost. Skylights are used in some canneries as a means of lighting and ventilation.

Though recently more thought has been given to the placement of machinery, work tables, conveyors, and so on, further improvements in this direction would make for more efficient production, a greater degree of cleanliness, and would add appreciably to the comfort of the workers. One New York cannery had supplied a sufficient number of metal stools for bean snippers but the aisles between the lines were so narrow that the workers had to place their stools sideways and could not face their work. Narrow aisles and crowded conditions are not infrequent, but there were only two or three canneries in either State where the agent actually had to duck under conveyor belts, stairways, and apparatus to get about the plant.

It is almost inevitable that the floors in canneries where certain processing is done should be wet. This condition can be overcome to a large extent by the use of cement floors built to drain readily and by the provision of platforms on which the workers can stand. Many canneries visited still have flat wooden floors. Several have long perforated metal platforms the length of the "line"; others seen, each long enough for several workers to stand on, are of wooden slats. Some are small wooden platforms for individual workers; in the use of these smaller platforms there is often an insufficient number and they are poorly placed. In some cases more than one worker will stand on a platform so small that there is scarcely room to balance.

Seating.

Certain work in canneries in connection with operating or feeding machines necessitates continuous standing; other jobs can be done sitting. With the exception of one cannery in New Jersey, all those visited in New Jersey and New York provide seats for the women workers whose jobs permit of their use. It probably is true that very few of them have enough seats for all workers employed on such jobs in peak season. These seats comprise metal stools with backs and in some cases with foot rests, stools without backs, wooden kitchen-type chairs, crudely constructed wooden chairs, and packing boxes of all kinds and shapes, some upholstered in burlap bags. Of a New Jersey cannery the plant report reads: "Two women sorting at a tomato-washing machine sit on stools, which to make them high enough are placed most dangerously on wooden boxes." The report on a New York cannery states that "one tomato line is operating at a sorting table on the receiving platform. The sloping table is placed on a narrow platform 1½ to 2 feet higher than the receiving platform. For seats, the elderly women working here are using two wooden boxes, one on top of the other, on which they perch precariously near the edge of the platform."

Sanitary and Service Facilities.

One canning company in New Jersey devotes the entire space of a 4-story building to personnel work and service facilities. This building houses the personnel, pay-roll, time, and medical departments, two cafeterias (one for men and one for women), locker rooms, toilet and wash rooms, kitchen, and laundry (for plant uniforms). These facilities are duplicated in the second plant of this company. One company in New York has equally adequate service facilities, but these two are exceptional.

The housekeeping conditions of the service facilities obviously are better in canneries where matrons are on duty and where definite arrangements have been made to have the facilities cleaned regularly. The expense of such provision probably is repaid in less loss of time by workers loitering in service rooms and in fewer repairs and less upkeep due to untidiness or carelessness.

Washing facilities.—Washing facilities are provided in all the canneries visited in New Jersey and New York, but it is questionable whether these are sufficient to meet the peak-season needs of most of the plants. In other than peak season, probably six of the New Jersey canneries visited would not meet the standard set by the Women's Bureau of one washbowl to every 10 employees up to 100 persons,[2] and this would be true of perhaps two or three canneries in New York. The washing facilities in six of the New Jersey canneries consist of sinks in the workrooms, each supplied with from one to three spigots. These sinks are used for many other purposes than hand-washing. In but one New York cannery visited are such sinks in the workrooms the only washing facilities provided. Other canneries in both States supply washbowls that usually are in more or less pretentious washrooms, often combined with toilet rooms.

Two canneries in New York have round, fountain-type washing arrangements that accommodate 6 or 8 workers at a time. Of the 21 canneries visited in New Jersey, 9, including those with only sinks in the workrooms, supply only cold water for washing purposes. In New York, of the 36 canneries visited 15 supply both hot and cold water for this purpose. At the time of visit, soap and towels were not provided in one New York and five New Jersey canneries.

Toilets.—Toilets separate for men and women are provided in all the canneries visited in New Jersey and New York. In many of the canneries the number of toilets would not meet, in peak season, the standard set by the Women's Bureau of 1 seat to every 15 women employed. Of the 21 canneries visited in New Jersey, 8 have outdoor privies and 1 has a small separate service building. Of the 36 visited in New York, 6 have outdoor privies and 1 has a small separate service building.

The condition of the outdoor toilets varies. At one New Jersey cannery that has outdoor toilets with the pit method of disposal, these toilets are freshly painted and kept very clean, and lye and disinfectants are used generously. In another cannery with similar equipment, the toilets are filthy; no one is responsible for keeping them clean. One plant with indoor toilet facilities has three flush toilets crowded into a tiny room, the openings to the three compartments being covered only by curtains and with a partition not reaching to the ceiling separating the compartments from the washing facilities. At least one plant visited in New York that provides indoor toilets has arrangements that are questionable from the point of view of sanitation. At the time the canneries were visited a number of the toilets were not supplied with paper.

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[2] The Women's Bureau has prepared a pamphlet (Special Bulletin No. 4) supplying authoritative recommendations for the construction of suitable washroom and toilet facilities for industrial plants, with suggested standards that conform to those of the American Standards Association sponsored by the U. S. Public Health Service.

Cloak rooms.—Sixteen of the 21 canneries visited in New Jersey and 21 of the 36 in New York have no cloak rooms or other special arrangements for women to hang their wraps. This is due in some cases to the short season of the canneries' work at which time workers would not wear wraps; but season would not excuse the failure to meet this need by the 3 canneries in New Jersey that operate 24 to 28 weeks and the 8 that operate 52 weeks, nor the 11 canneries in New York operating 15 to 25 weeks and the 8 operating 52 weeks. In the canneries where no provision is made, wraps are hung on backs of chairs or are thrown down on boxes or tables about the workroom.

Two of the five New Jersey canneries that furnish lockers for wraps have not nearly enough for all workers. In one New York plant only women workers members of the union are supplied with lockers in a locker room; nonunion or seasonal men and women workers hang their wraps on racks in the linen room. Several of the New York canneries do not supply enough lockers for all workers, one combines the locker room with the rest room, another with the toilet room, and one has hooks around the walls of a small cloak room.

One of the best cloak-room arrangements is a large room enclosed by heavy wire netting where racks are provided on which to hang coats, with shelves above them for hats and packages. Such an arrangement is much more sanitary and less hard on clothing than that afforded by the use of lockers, but to be entirely satisfactory should be in the care of matrons.

Rest rooms and lunch rooms.—Six of the 21 canneries in New Jersey are equipped with rest rooms; two others combine rest and lunch rooms. Eight canneries have lunch rooms or cafeterias. In all of them food is available. Six of them are canneries that operate 52 weeks. At two plants the migratory workers eat their lunches in the dining rooms connected with the housing units, adjacent to the plants. In one plant lunch rooms are separate for colored and white.

Seven of the 36 canneries covered in New York have rest rooms. Only 5 provide cafeterias or lunch rooms; all these operate 52 weeks in the year.

Uniforms.—Uniforms are required and worn in but one of the canneries visited in New Jersey. Uniforms, caps, aprons, and gloves are furnished free by the company. The company launders free the men's uniforms and the women's aprons and caps, but the women prefer to launder their own uniforms as these are made to individual order and they do not want to risk having them exchanged for others.

Six canneries visited in New York require uniforms, one other furnishes uniforms, caps, aprons, and rubber gloves in some instances, still another urges the workers to purchase the uniforms and caps kept in stock at a local store. Three of the six plants requiring uniforms furnish them free, together with caps, rubber aprons, and rubber gloves, and launder the uniforms and caps without charge. At one plant a $2 deposit for the season is required on uniforms, $1 of which is returnable when the uniform is turned in. Caps and aprons are not returnable and cost 25 cents and 35 cents, respectively. Another cannery requiring uniforms rents them with caps and aprons for a nominal sum.

Medical facilities.—A very fine medical department is maintained in one cannery in New Jersey and in one in New York. The medical department in the New Jersey plant has fine facilities and equipment; it has a certificate from the American College of Surgeons. A doctor is regularly in charge and is on duty from 8 a. m. till 12:15 every workday. A head nurse is on duty from 3 p. m. to 12 midnight so as to cover time on both shifts. Two or three registered nurses divide the time on the two shifts and an extra nurse, also registered, is engaged for the peak season. The facilities consist of a surgical dressing room with instrument cabinets, dressings, sterilizers, and so forth; an eye, ear, nose, and throat room; two bedrooms, each with two beds supplied with first-quality mattresses and each room with a lavatory; and a laboratory where blood tests, urinalysis, Wassermanns and vaccinations are given. There is also equipment for baking and diathermy. An examination is made of each new worker and all workers are examined once a year thereafter. A wheelchair and two stretchers are provided in the department and other stretchers are placed throughout the plant.

Another New Jersey plant maintains a large and well-equipped first-aid room with a registered nurse in charge. One cannery has a clinic equipped to take care of minor burns, cuts, headaches, and so forth; three registered nurses are employed here, two for the day shift and one for the night shift. No comfortable place is provided to lie down and it was reported that on the day before the plant was visited a girl who was ill had sat all day in the ladies' room waiting to get a ride home at 6 o'clock. The facilities in another cannery comprise a dispensary with inadequate space in part of a tiny building housing a canteen or lunch room. There is no privacy here. The "cot" consists of a mattress, with no springs, placed on a wooden table. There is a trained nurse in charge, who renders the best service she can under the circumstances and manages to keep the place immaculately clean. All the other New Jersey canneries provide only first-aid kits or cabinets and some of these seem to have minimum supplies.

Besides the one New York cannery with a complete medical department that corresponds to the one in New Jersey described above, five New York plants provide very well-equipped first-aid rooms with trained nurses in charge, and require medical examinations of new workers and periodic examinations thereafter. Another plant has a small first-aid room and the nurse here acts also as matron. As in New Jersey, the remaining canneries visited in New York have first-aid kits or cabinets variously stocked with supplies.

PROBLEMS OF MIGRATORY LABOR

The presence of migratory labor in New Jersey and New York has presented a continuous problem over a long period. Migrant workers have been attracted to these States by the promise of seasonal work and by the relatively higher wages paid. That some of these people stay and become a permanent part of the labor supply presents the separate problem of how they are to be absorbed into the economic and social life of the communities of their adoption so that they may be independent and self respecting and will not become a burden requiring relief from private and public agencies.

In spite of the fact that in recent years the attention of the general public as well as that of official agencies—Federal, State, and local—has to an increasing degree been directed toward migratory-labor problems, particularly as regards living conditions, there still remains much to be done. Greater cooperation between the official agencies at all levels is essential in determining the extent of the need for such workers and in effecting an integrated plan for adequately providing for and controlling the conditions under which migrants work and live. The war program has greatly stimulated the use of migrant workers and has increased the urgency of the matter of control.

The migrant worker, it would seem, has been nobody's responsibility. Federal agencies have been slow to step in, due in part to lack of funds to do an adequate job and perhaps due partly to a hesitancy in encroaching on what might seem a State or local problem. Causes of States' failing to meet their responsibilities include lack of funds, absence of a well-defined authority to investigate and enforce their recommendations, and a feeling that the migratory worker does not "belong", that these people are not a permanent part of the population. With the exception of a few individuals, the attitude of the communities in which migratory workers are found seems to be one of indifference if not resentment. Such expressions as, "We didn't bring them here"; "We don't want them"; "The employer brought them here, let him take care of them" are commonly heard. The fact is, however, that if migrant labor is essential to the producing of crops and the processing of food, either annually in normal times or for the duration of war, the raising of standards for its employment is of vital importance, since its very presence is bound to affect the lives of the people in the community and may, if not properly dealt with, cause unnecessary problems and even constitute real hazards. It is altogether true that certain aspects of the migratory-labor problem will never be satisfactorily worked out until the communities in which migrants work and live are willing to assume some interest in and responsibility for them.

The welfare of the migrant worker is a primary responsibility of the individual employer. This may be less true in wartime when, because of its large contracts for food, the Government becomes practically a co-employer and when it is more difficult to obtain materials for the housing and other arrangements that must be provided. This does not alter the fact that, on the whole, employers have not in the past met their responsibilities in this direction. The war should not be used by them as an excuse for doing less than is possible. Migratory workers themselves have little control over the living conditions with which they are confronted on the job.

HOUSING AND LIVING CONDITIONS FOR MIGRATORY WORKERS

It may be accepted as a fact, in a war emergency as in peacetime, that only when a thorough survey shows the local labor supply to be inadequate, should the employment of migrant workers be considered. If workers can be secured in the vicinity of the industry, the problems of housing, transportation, feeding, child care, and so forth, are greatly reduced.

Of these problems, that of housing seems the most important and the most difficult. One difficulty lies in the fact that the most careful estimates of the probable number of workers needed and expected in a given area must be available if adequate programing is to be at all possible. The difficulty of persuading canners to order their labor early is a factor in making it hard to anticipate housing needs.

Delay in the completion of Government housing projects resulted in a serious condition in at least one important canning and farming area in New Jersey. This was due not only to a shortage of labor in the building trades, and a difficulty in securing building materials, but to a lack of programing housing needs. The result here was that American migrant workers were expelled summarily from their homes and in some instances put into quarters without the bare necessities of decent living, in order to make room for hundreds of Jamaican workers whose contracts called for certain minimum guarantees in living standards.

New Jersey.

Realizing that a consideration of the housing situation for migratory workers in New Jersey involved an overlapping of the interests of several agencies, and in the interest of cooperative effort, the agent of the Women's Bureau, together with representatives of the U. S. Children's Bureau, the Regional Office of War Manpower Commission, and the Regional Office of Community War Services made a joint survey of some of the housing provisions in that State. The survey included visits to nine centers, housing the employees of four different canneries. In addition to the projects visited jointly, the Women's Bureau agent surveyed two other housing centers in New Jersey. Both good and bad conditions were found. A description of the several centers follows:

1. Occupied by southern white families. A group of 36 prefabricated houses, each about 16 by 16 feet, in four rows of 9 houses each. The houses are well spaced and there are fairly wide spaces between the rows. Screened windows on three sides of each house and a screened door on the fourth. Houses occupied by as many as eight people, in some cases more than one family.

Each house has four built-in double-decker bunks, but there are not enough mattresses for all. Each house has a table with benches attached to the sides. At time of first visit no stoves or cooking utensils had been supplied. Later, two-burner oil stoves were installed in some of the houses but they are a heater type unsuitable for cooking; the burners are a considerable distance from the top surface, with no chimneys above the burners. Some of the tenants were dismantling sections of the stoves in an endeavor to make them usable for cooking purposes. If they wish to cook they must either use these stoves or build a fire out of doors.

Water supply consists of three faucets for cold water, one at the end of each camp street. No showers and no facilities for washing clothes.

Privies of a sanitary type of construction, two for men and two for women, close together in the center of the rows of houses. Very little privacy. Sewage disposal supposed to be by pit method, but as yet no pits under the women's toilets and no doors on these. An open space around outside of the toilets at base of the privies, so flies and other insects have easy access to pits.

A company store accessible, but inadequately stocked. Serves not only this camp but four others and is open only three hours in afternoon when many women are working in the cannery.

Cannery has a clinic but presumably only sufficient to take care of industrial accidents or the minor sickness of workers in the plant.

No supervision is provided for the camp. No telephone at camp or within reasonable distance for use in emergencies.

It was indicated that this camp was only temporary, but it had been occupied over three weeks at time of visit. It was apparent that no family units planned for these people would be constructed by employer or by Federal Public Housing Authority this season.

2. Occupied by Negro families. This camp consisted of tents with wooden floors. It was reported that the families were to be moved to new housing when it was completed, but here again it was understood that the new housing planned for family units being built by Federal Public Housing Authority could not be completed this season. Definitely, some other method of housing the workers should be made.

Cots with one blanket were the only furnishings provided; no tables, chairs, or stoves.

Water was piped in with faucets at intervals along the camp streets, but there were no showers and no facilities for washing clothes. Waste water was poured into gutter in front of the tents.

A toilet pit was being dug but on the day of the visit there were no toilet facilities available for the use of tenants of this camp.

Tent village was considerable distance from clinic at cannery where tenants worked, and also from nearest store.

No telephone service and no supervision provided for camp.

3. Occupied by approximately 300 Jamaican men and nearly 150 American Negro women. Barracks provided separately for men and women, built originally for a C. C. C. camp. Beautiful location, some distance from cannery in which these people work. Barracks furnished with cots placed fairly close together, but crowding not too bad considering emergency conditions.

Each barrack has hot and cold water. Separate showers for men and women. Facilities for washing clothes.

Flush toilets in all barracks.

Cafeteria service provided for all residents of this camp, with food of a type that Jamaicans prefer.

No medical service at camp, but services of cannery clinic available.

Camp has a resident supervisor; telephone service available in his office.

4. Occupied by single white women. An old summer-resort hotel is used for a camp; situated on a small lake. Accommodations satisfactory.

Rooms equipped with same furnishings as provided when building was used for a hotel. These include beds, mattresses and bedding, chairs and dressers.

Hot and cold running water; shower baths and bath tubs; provision for washing clothes.

Meals prepared by workers employed for this; served in dining hall separate from main building.

No medical facilities provided at camp. Clinic at cannery not only several miles away but not equipped or staffed to provide medical care for workers when not actually on the job.

Telephone service available. A resident supervisor, a woman school teacher, in charge of the camp.

5. A Farm Security Administration camp. Occupied by Jamaican men and American Negro families.

Due to daily shift of occupants to privately operated camps, it was hard to determine exact number of occupants on a given day. According to Regional Office of Farm Security Administration there were about 516 Jamaican men and approximately 100 Negro families living here the day of the visit. The Negro families were gradually being moved to other locations but a number still lived here at the end of summer.

Jamaicans housed in prefabricated wooden houses and Negro families in tents. Houses and tents contained the barest necessities in the way of furnishings.

A fairly generous water supply but only one shower-bath building and but 12 shower heads for entire camp. Supervisor said more showers were planned and would be built shortly. No special facilities for washing clothes; women wash for their families in galvanized tubs.

Several privies on borders of camp, but built too close to some of the houses and not easily accessible to others. Not adequate in number.

Single men fed in cafeteria, but families prepare own meals on cook stoves provided in the tents.

That a check and closer supervision of camp's sanitary arrangements should be made seemed necessary, as there had been one death from typhoid here.

A clinic is set up for the camp in a trailer, attended by a Negro public-health nurse and by a doctor who gives several hours a week. Medical service of Farm Security Administration in this region is under direction of a United States Public Health Service officer assigned to the Regional Office of the Farm Security Administration.

A Farm Security Administration employee is assigned to manage this camp.

6. Occupied by Negro families. Most of the tenants work on farms but some in a cannery. Number of occupants not determined.

Camp consists of a combination of frame houses built during World War I, of new prefabricated houses, and of tents. Prefabricated houses are 16 by 20 feet, some with partitions down the middle. Are occupied by 8 or 10 people, and in one case 12 people live in one of these tiny boxes. In a house divided by a partition two unrelated couples are assigned to one side.

Houses and tents furnished with cots and bunks, but not enough mattresses. No cook stoves provided. A few families have their own stoves, but most tenants have to build open fires in order to cook.

One water line with an inadequate number of spigots. No facilities for washing clothes. One tenant said there were only four washtubs in whole camp, and people who can do so borrow them.

Toilet facilities of the outdoor privy type, and apparently not a sufficient number. Some people use the nearby woods because toilets so few and inaccessible. An open space around base of privies permits easy access by flies and other insects.

Distance to nearest store approximately three miles, and store open only about three hours in afternoon. No provision for refrigeration of perishable foods.

Said to be no garbage and refuse collection, and such material is deposited in woods on borders of camp.

No medical or nursing care provided except at cannery clinic, a considerable distance from camp. Clinic set up to take care of workers in plant and not for general medical services.

No supervisor of camp in regular attendance and camp not provided with telephone service.

7. Occupied by Negro families. This tent colony, set up in a field, furnishes temporary shelter until other housing can be made available. Families are to be moved into a Federal Public Housing project when it is completed. However, since public housing is not far enough along to be finished very soon, it appears that people in this camp must stay here a long time.

Here again the facilities for even minimum decent living are absent. Tents are close together, and because of excessive heat the sides are kept up most of the time, giving the effect of dozens of people living together in a more or less promiscuous fashion. Workers on night shift have little chance of resting in daytime, as noise of children and other campers goes on unabated.

Roughly constructed toilets have been built but are insufficient in number.

Water is piped in, but there are no facilities for bathing and laundry. A few washtubs among the tenants, loaned from person to person.

Workers in cannery can get one and sometimes two hot meals in cannery cafeteria. These consist of sandwiches, hot soup, tea, coffee, or milk. It seems almost impossible that they could prepare even one simple square meal a day with the stoves they themselves provide and their few cooking utensils. A company store is nearby but it appears inadequately stocked.

No medical service provided for tenants of camp beyond that offered by cannery clinic to workers when on the job. No telephone at camp, and nearest doctor and hospital in a town nine miles distant.

No one to supervise this camp.

8. Occupied by adult men and women and by family groups. This camp built recently as a permanent camp; constructed of lumber and wallboard. Houses in units 20 by 20 feet and 20 by 16 feet with partitions down the middle, each half having its own door. Camp intended for single men and women but has a number of family groups with children. During peak season a great many additional men were brought in. To take care of these, tents were pitched in front of regular camp. All service facilities planned to take care of permanent camp, and probably adequate for that, must have been terribly overtaxed by addition of this tent colony.

Each house has built-in double-decker bunks for four people, a wooden table, and one or two chairs. Mattresses and pillows made of ticking filled with straw, and some bedding, are furnished for each bed.

Sanitary privies are on the outside border of camp at rear of housing units. Adequate in number for the occupants expected for permanent camp. Separate toilets plainly marked for men and for women.

Adequate supply of water with a spigot between each two houses; separate shower baths for men and women; four stationary tubs for washing clothes, with hot and cold water, in a wash house.

A large mess hall, and another building for commissary and kitchen. It is thought by owners that if any considerable number of families with children occupy this camp it may be better to use the mess hall for a recreation center and the kitchen as an office. This would necessitate providing stoves for individual housing units so that families could do own cooking. Milk is to be delivered to camp daily, but as yet no provision for refrigeration of milk or other perishable food has been made. Food stores of the town are readily accessible and believed to be adequate.

Regular garbage and refuse collection has been arranged for with town collectors.

Camp not equipped with a clinic, but situated on outskirts of a town in which cannery has two doctors on call.

Camp is to have a resident supervisor, available to answer questions and take care of any emergencies that may develop. It is planned to keep a complete register of all occupants at all times.

9. Originally designed to take care of Italian families from a city in an adjacent State, but probably to be used this season for Negro migrant workers from South. Cannery had not yet started operating at time of visit.

Camp is directly adjacent to cannery on outskirts of a small town. Consists of long, shed-like, wooden buildings divided by partitions into about 20 units. A covered porch runs full length of the front of each building.

Each unit has 2 double-size built-in bunks of very rude construction. Italian families had always brought and seemed to prefer their own mattresses and bedding, but these will have to be furnished by company if migrants unused to this are brought from a greater distance.

Hot and cold water are available. No showers, and migrants heretofore have furnished own tubs for washing clothes.

Outdoor privies with septic tanks, in three accessible locations, are provided.

An adequate number of cook stoves provided for community use, placed on porches of the buildings. Fuel for these is furnished by company. Food stores are accessible and apparently adequately stocked.

Cannery first aid is available to camp. Nearest doctor is in a town about five miles distant; nearest hospital, seven miles from camp.

10. A housing unit occupied by white and colored men, consisting of two-story bunkhouses built on cannery property, was not inspected. Another unit, for white and colored women, was about a block from the cannery. This consisted of a two-wing, one-story dormitory of frame and stucco insulated with beaverboard, estimated by the company as able to house 250 women. White women were to occupy one wing and colored women the other. At time of second visit to the camp the tenants were occupying it, the furnishings were in, and the place seemed terribly crowded. The beds were placed so closely that in some cases there was not space for a chair between. Chairs had been furnished but some of them could not be used because of lack of floor space.

Each wing has an office and a tiny reception room; toilet rooms, with an adequate number of flush toilets; shower rooms; and laundry rooms with stationary tubs and ironing boards. No recreation room in the building. Outside court could be used in pleasant weather but dormitory is too near a busy street to allow for much privacy.

Double-decker beds, mattresses, pillows, sheets, pillow cases, and towels are furnished by company. Linens are changed frequently and laundered by company free of charge.

A large brick building adjacent to plant has been renovated and made into a central mess hall for the use of both men and women. No cooking is done in dormitory. Three meals a day are served and the cost to workers seems reasonable. Mess hall could be used for certain recreational activities if a program could be set up.

No clinic is provided in dormitory. First aid is available to workers in the cannery. Plant has a doctor on call and the physicians in the town are accessible. Telephone service is available.

A matron and assistant matron supervise upkeep of the dormitory. Apparently they lack the qualifications to get the best cooperation from tenants.

11. Occupied by colored men and women. Camp consists of a long, narrow, frame dormitory building originally intended to house only men. Building was supposed to have space for 100 workers but is not adequate for this number. There were about 45 tenants at time of visit, 30-some men and 10 or 12 women.

Windows and doors of dormitory are screened and heavy wooden drops or shutters can be let down in case of rain.

Double-decker bunks placed close together on both sides of the room leave a narrow aisle down the middle. Some bunks have been replaced by army cots. No chairs or other furnishings. When company found itself confronted with the need of housing women as well as men, partitions of light wood or heavy cardboard were put around some of the bunks. These partitions are in no sense soundproof, they do not reach to the ceiling, and there are wide cracks around the doors. Privacy is absolutely impossible, not only for the women for whom inclosures are intended but for the men who occupy the open dormitory space. Aside from the potentialities for immoral behavior which the occupants of this center may or may not have, in the face of these housing arrangements the complaints by the employer of such behavior seem ironical, even when, several of the women being fired on the grounds of seeming misconduct and unwillingness to work, a number of men quit with them.

There are two showers at the end of the room. A partition is placed between the two, and one is designated for men, the other for women.

The out-of-doors toilets are behind the dormitory or bunkhouse. One of them is for women. It has a screen door, and a wooden partition is built in front, which affords little privacy.

Adjoining the dormitory, a screened-in pavilion-like building houses dining room and kitchen. This seems adequate. The dining room is furnished with long wooden tables covered with oilcloth, with benches on either side of the tables. The migrants eat their regular meals here but can buy sandwiches, soft drinks, and so forth at cannery restaurant. Kitchen is equipped with a large range and what seems an adequate supply of utensils and dishes.

The colored preacher who recruited these workers has supervision of their living arrangements. He also conducts some religious meetings for them.

There is no telephone in this center, but one in the cannery is accessible in case of emergency.

New York.

As was true of New Jersey, both good and bad conditions were found among the New York housing centers.

1. A company that furnishes housing for men only has leased a building for this purpose. The building appears adequate from point of equipment and sanitary arrangements but was not closely inspected.

Board and lodging are provided at this center, as is also transportation to and from work.

Recreation is supplied in the way of a soft-ball diamond and tennis courts, radios, checkerboards, cards, newspapers, and magazines.

2. A new center not yet occupied at time of visit. Adjoining dormitories, one for men and one for women, within walking distance of cannery. Buildings are of frame and stucco and have a capacity for housing 250 men and 250 women. Each dormitory has office, lounge room, laundry room, shower room, and toilet and wash rooms with adequate facilities. The double-deck metal beds have double metal lockers attached to them. It is planned to have both a man and a woman supervisor for the dormitories.

A dining room connecting the two dormitories is to be used by both men and women.

3. This company has its own housing center for migrants and the Federal Public Housing Authority has a trailer camp here for the care of additional workers. The company's center was occupied by white and colored families and unattached men and women at time of inspection. On first visit the trailer camp was occupied by southern white families, but a month or so later it was occupied largely by colored families. This almost complete turn-over was reported as not due to unsatisfactory living arrangements but to unsatisfactory working conditions.

The company housing is crowded into a little space across from a railroad track between a public road and some plant buildings. It is old and dilapidated. Center has had a reputation for bad conditions but the day of the visit it was clean and not overcrowded. Probably the presence of the trailer camp has eased the situation and has encouraged better conditions. Rooms are small, accommodating from two to four people, and are sparsely furnished with bunks and an occasional chair. Apartments and conveniences for white workers are separate from those for colored.

Cooking arrangements and dining rooms, separate for colored and white, are in the building used for sleeping quarters.

Outside toilets probably meet requirements of State and local ordinance but they seem few in number and are not properly cared for.

No bathing facilities were seen.

The F.P.H.A. trailer camp, in a thinly planted grove of trees, is very attractive, though on land that does not drain very well and often makes a muddy playground.

There are 20 expanded trailers housing from four to six persons, and 30 standard ones housing from two to four. The trailers have linoleum floor coverings, built-in cupboards and closets, davenport-like beds, chairs, and so forth. They have electric stoves and refrigeration. There are a trailer office, which is headquarters for the camp supervisor and the post office; a camp clinic; a wash house with six or eight stationary tubs supplied with hot and cold water and ironing boards; shower houses, separate for men and women; and a trailer for use as a child-care center. It is expected that the Child Care Committee of the New York State War Council will place a worker here. The New York Church Committee on Migrant Work already has a representative here, engaged in supervising a religious and recreational program for the workers.

4. About 25 one- and two-story houses of from three to six rooms, owned by the company. Houses are spaced fairly well apart. They need paint and repairs but seem fairly comfortable. Some are occupied by more than one family, according to size of family and size of house. Company supplies the minimum requirements and the workers bring additional furnishings with them.

Cooking is done in two or three community kitchens or cook houses and there are enough stoves for the families.

The out-of-door toilets are located conspicuously, crowded close to the houses, some behind and others in front of the houses.

Separate shower houses for men and women are supplied with hot and cold water. The laundry is done in the houses, which have running water. There is a small recreation building.

Center is adjacent to the cannery and at the edge of a sizable town where a sufficient food supply is available.

Company has a doctor on call whose services are available to workers in the housing center, and medical and health services of the town are accessible also.

5. Occupied at time of visit by about 80 Negro men and women and some children, who came from Florida. Canning season was practically over when center was visited and many workers had left. Buildings consist of an old farmhouse and an old barn, both in a terrible state of disrepair. House was filthy the day of the visit, windows broken out and screens torn. Furnishings very meager and crude.

It was not ascertained how many persons had occupied the house, but not enough sanitary conveniences were provided to meet the needs of more than a few. No bathing facilities beyond those the worker might provide for himself.

As for the barn, holes in the walls have been partially patched up with cardboard. A few small windows have been cut in the walls; they are covered with screening, but obviously are ineffectual in face of the gaping cracks through which wind, rain, flies, and mosquitoes enter unrestrained.

Sleeping rooms are partitioned off by use of heavy cardboard, which extends a few feet above head level; a kitchen is set off in one corner of the barn, also with cardboard. Gas is piped in for the kitchen stove. A long table covered with oilcloth stands on the unpartitioned floor, which serves as a dining room. Flies attracted by the cooking and food are thick. Caterpillar-like worms crawl on the floor and over the beds. Soiled bed ticks filled with straw are used as mattresses.

There are no bathing facilities nor running water at the barn. Out-of-doors privies, inadequate in number, are behind the barn and it is questionable whether they meet the minimum requirements of State or local sanitary codes.

There is no provision for child care and no recreational program is provided.

6. Formerly occupied by Italian families brought from a city within the State, but occupied this year by colored families. Center is composed of two rows of run-down, dilapidated shacks that should be condemned. The built-in bunks with wooden slats and no springs are broken down and dirty. There are chairs in some of the rooms or shacks but most of them are without any furnishings but the beds. The Italian families that formerly occupied this center preferred to bring their own bedding, but this is impracticable for migrants from a distance. The workers do their own cooking and a stove is provided in each shack. Fuel and lights are furnished free by the company. Outdoor toilets, one for men and one for women, are inadequate in number and are too close to the shacks; the odor was disagreeably noticeable the day of the visit. There is only one shower, adjacent to the toilets, for the entire group of shacks.

Food is available in the nearby stores of the community. Such medical and health services as are provided in the town are accessible to these people.

There is no plan for recreational activities and no provision for child care.

7. Occupied by Italian and Polish families from nearby cities. These migrants are housed in buildings formerly the winter quarters for employees and animals of a circus. The buildings are for the most part shack-like structures, unpainted and forlorn looking. Each family is allowed one, two, or three rooms, according to size of family. Beds are the only visible furnishings and are of all kinds from wooden bunks with wood slats to old brass bedsteads. The tenants supply their own bedding.

Meals are prepared at several community cook houses on wood-burning stoves shared by the workers.

Water piped into the grounds is obtainable at several spigots.

The outdoor privies are flushed by a motor arrangement. No showers or other bathing facilities are provided.

Scraps of food were lying on the ground outside the houses the day of the visit, attracting flies; the silage pile directly behind the quarters smelled horrible.

The medical and health facilities of the nearby village are accessible but their adequacy was not determined.

The company has arranged to use one building as a service center. It supplies a trained nurse and the New York Church Committee on Migrant Work provides two social workers.

8. Three housing centers for farm migratory workers were reported to the Women's Bureau agent as having unspeakably bad conditions. They were said to have passed the inspection of local and State health inspectors but were considered by many citizens in nearby communities as not meeting at all the minimum standards of decent living. The broader social aspects of the living conditions for these people apparently had been given no con-

sideration. The Women's Bureau agent observed these camps but did not inspect them because they were for farm and not cannery workers.

Company Charges for Lodging.

In both New Jersey and New York several companies provide free lodging for their migrant workers. One in New Jersey furnishes lodging and a light luncheon in the plant cafeteria without charge.

The charges made by companies for lodging and three meals a day range from $6 to $8.50 a week; light and fuel are included. The two companies visited in New York that provide lodging and three meals a day to workers charge $8 a week. The other companies furnish lodging without charge. Trailer houses in the Federal Public Housing Authority camp rented for $7 a week, and the rental included electricity for light, cooking, and refrigeration. Workers furnished their own meals.

Transportation.

Most of the canneries visited were experiencing transportation difficulties, many of them due to the curtailment by the Office of Defense Transportation in the amount of gasoline available to bus companies and drivers of private cars. Seven of the 21 canneries visited in New Jersey operated company busses or contracted for the use of school busses and others to transport workers to and from work. One large cannery in New Jersey operates its own bus company to transport workers to and from company housing centers and from nearby towns. This company had also arranged with the Public Service Bus Company for special service to and from specific points. Several canners said that the curtailment of bus service made it impossible for many women in nearby communities to work in the canneries and necessitated the bringing in of more migratory workers for whom housing must be supplied.

Women who traveled long distances complained about the time lost in waiting to be transported by company busses, as well as by public conveyance. Many workers felt that they should be compensated for this lost time. Workers recruited locally for one cannery complained that the company does not keep its promises about providing transportation and that busses often are late or do not come at all. Many workers in New Jersey drove their own cars and had "riders."

Most of the canneries visited in New York were near bus lines or trolley lines. As elsewhere in the country these busses and trolleys usually were crowded beyond normal capacity. Many workers drove and shared their own cars. Only two canneries visited operated busses and two others sent automobiles to pick up small groups of workers.

STANDARDS FOR THE HOUSING OF MIGRATORY WORKERS

Adequate housing for migratory workers is an important element in the successful utilization of manpower and to meet the needs for labor in agriculture and in food-processing plants.

The pressure of the war situation was bringing some employers of migrant help to a realization that the kind of housing they provided had a definite bearing on their ability to get and to keep the workers. In all too many instances, however, the attitude seemed to be, "it's as good as they've been used to" or "we can get plenty of migrants without spending any more on housing."

Several factors enter into a determination of what constitutes suitable or satisfactory housing arrangements. If the housing provided is to be utilized for an emergency period, as for the duration of the war, the type of construction and arrangements may be of a somewhat temporary character. If, on the other hand, the housing is intended for migrant workers who annually augment the seasonal-labor supply, then, obviously, housing of a more permanent character should be built. Climate will be a determining factor in the type of construction to be used, and whether the houses are to be occupied by unattached men or women or by family groups should influence the kind of construction and the spacing of the units. In any case it is necessary that certain minimum standards be met if the housing is to be fit for human habitation. The standards outlined here entail nothing elaborate, and the knowledge and experience of sanitary and building engineers are not necessary to recognize that such standards are essential minimums.

Type of Construction.

For temporary housing, tents may be used in warm weather for unattached men and women if entirely separate units are set up for each and if adequate provision is made for water supply, sanitary facilities, furnishings, and so forth. The tents should be provided with platform floors and with adequate protection from the weather. Tents are not recommended for the use of family groups nor for workers doing their own cooking. The Federal Public Housing Authority has set up trailer camps in some places to meet the emergency. Some of these include such facilities as housing for recreation centers, child-care centers, clinics, shower houses, laundries, and so forth. They have the advantage of being movable and can be taken from place to place as the need arises.

Portable prefabricated houses have been used for temporary quarters, but in many cases the desirability of this kind of housing is defeated by overcrowding and the lack of essential housekeeping facilities and equipment as well as adequate sanitary arrangements. One farmer met the need of housing for a group of college girls by renovating and converting a chicken house for their use. It turned out to be most attractive and livable and the girls' promise to come back another year was conditioned on their being allowed to live in the "chicken house." Another farmer converted a granary that had long been out of use into a most satisfactory dormitory for men. C. C. C. camps have proved useful for housing migratory workers, and small summer hotels, unable to operate in wartime, also are used for this purpose.

Location and Lay-out.

Whether for temporary or for permanent use, the location of housing for workers is important. The centers should be on sites convenient to the place of work. If, in providing temporary housing, it is impossible to locate the housing center near the place of work, adequate transportation facilities should be maintained. The center should be on well-drained ground where it can get some sunshine, and should be near an adequate supply of pure water. The grounds should be lighted at night.

From the standpoint of health and cleanliness, dormitories, eating quarters, toilets, and so forth should not be crowded together. The kitchen, commissary, and eating quarters should be some distance from the sleeping rooms and especially from the toilets. If incinerators are used they should be near the kitchen.

Water Supply.

Plenty of wholesome water for drinking and bathing should be supplied. Privy vaults and cesspools should be so placed that pollution of the water is not possible and the water supply should be free from organic contamination.

Sleeping Quarters.

Good sleeping quarters are essential to the health of the worker and to his best effort on the job. A standard amount of air space must be provided for each person. Houses should be properly ventilated and protected from the weather. Doors and windows should be screened. Since workers transported by automobile, bus, or train from distant places cannot possibly bring much in the way of household equipment with them, minimum furnishings provided in each house should include sanitary beds, one for each person wherever possible; mattresses and blankets; and a chair for each person. Cooking should not be done in rooms used as sleeping quarters, but if cooking is to be done in individual units cook stoves and cooking utensils should be provided. If sheets and pillow cases are furnished they should be changed at regular and frequent intervals. Some arrangement should be made in the assignment and supervision of quarters to insure that workers in plants operating more than one shift have opportunity for rest and sleep in the time allotted for this.

Cooking and Eating Quarters.

If central or community cooking and eating quarters are provided they should be large enough and well lighted and ventilated. These quarters should be screened and free from flies. The place where food is stored should be kept clean and sanitary. Refrigeration should be provided for perishable food. Dishes, cooking utensils, and so forth should be kept clean. Dogs and other animals should not be allowed in these premises. Persons preparing, cooking, or serving food should be required to have a physical examination.

Regardless of whether the food is to be prepared in individual houses or in community kitchens, an adequate supply of inexpensive, wholesome food should be available.

Garbage and Refuse Disposal.

In rural areas where there is no public collection of garbage it should be the responsibility of the company operating the housing center to see that regular daily collection is made. Until disposed of, garbage should be kept in covered containers. Metal containers are preferable if obtainable.

Toilets.

It is essential that adequate and healthful means be provided for disposing of sewage.

Wherever possible, the installation of flush toilets is urged. In temporary housing centers it may be necessary to substitute outdoor privies or toilets with septic tanks. If this is done, consideration to privacy should be given in their construction. Doors should be provided with fasteners. Toilets should be marked clearly as for men or for women. They should be located in places conveniently accessible but not so near other buildings as to be unpleasant. They should be adequate in number, not less than 1 for every 15 people and at a greater ratio if required by law. Pits should be dug to a proper depth. Lighting and ventilation should be good. Seats should have covers. Disinfectant should be supplied, and lye, soil, or other substance for covering surface excreta so as to keep down odors and repel flies. A constant supply of paper should be furnished. Cleanliness and care in the use of toilets must be insisted on.

Bathing Facilities.

Every housing center should be provided with bathing facilities. Showers are preferable because more sanitary, more easily installed, and cheaper. There should be at least one shower for every 15 persons. These should be near the sleeping quarters and should be allocated to men and women separately. Bathing houses should be well-ventilated and well-lighted. In permanent camps the floors should be of cement and so constructed as to drain well. Walls should be lined with nonabsorbent material. Drainage from bathrooms or shower houses should be disposed of in some sanitary way. Ground that is wet, if such condition is unavoidable, should be treated for mosquito prevention. In addition to showers, adequate facilities for washing face and hands should be provided. A sufficient supply of both hot and cold water is essential.

Laundry.

Tubs or sinks should be furnished to enable employees to launder their clothes and an adequate supply of hot water should be provided for this purpose.

Sanitation and Health.

In every housing center one or more persons should be employed whose specific duty is to keep the place clean.

The sanitary and health regulations of the State and localities in which there is housing for migratory workers should be strictly observed. There should be regular inspection of the centers by sanitary and health authorities, and the enforcement of regulations should be insisted on by citizens.

Sufficient health and medical care should be available and access to this care should be provided for the workers. Cases of serious illness or communicable disease should be immediately reported to the local health officer.

As already suggested, nothing that would encourage the breeding of mosquitoes should be allowed to exist.

Some method for the extermination of bedbugs should be used frequently and persons infested with lice should be required to get rid of them and be given the necessary means for such treatment.

Child Care.

It is important to the working mother as well as to the welfare of the child that provision be made for the care of young children. This care, to meet the needs of children of all ages, should be in accordance with the standards established by the Children's Bureau of the U. S. Department of Labor. Such care should include centers for children of pre-school age and should provide playgrounds, leisure-time programs, and supervision after school hours for children of school age.

Recreation.

The most desirable thing in the way of recreation for migrant workers is that plans be developed as a part of the community program in the locality in which they live. In addition some provision should be made at the housing center for a place where workers can get together in groups for singing, dancing, and games, and where books, magazines, and newspapers are available.

Registration.

A complete register of all the occupants of a housing center should be kept up-to-date at all times.

Supervision.

Housing centers may be well-located, well-built, well-equipped, and provided with adequate services, but if there is not proper supervision the center will not operate successfully. This supervision involves not only the policing of the buildings and grounds from the point of view of cleanliness, sanitation, health, and order, but takes into account the workers' welfare from a broader social point of view. This does not suggest the necessity of supervision by a trained social worker, which, however desirable, is quite out of the question in most cases, but it does mean the selection of a supervisor of sympathetic and intelligent understanding, to whom the workers can go for advice on personal and group problems and who can suggest activities and assist the workers in the best use of such leisure time as they may have.

Willingness on the part of the employer to provide some of these things not required by law is almost sure to result in a better attitude on the part of the workers toward their work. It tends to attract a higher quality of labor and should be a factor in securing a more permanent labor supply.

Summary of Migrant Problems.

Only when a careful survey of the local labor supply, including all available women, shows such supply to be wholly inadequate should the bringing in of workers from a distance be considered. If workers are available in the vicinity of the industry, such community and industry problems as housing, transportation, feeding, and child care can to a large extent be avoided.

Adequate transportation is so essential to securing workers from nearby communities that every effort to meet such needs should be made.

When migrant workers are recruited, false promises or misrepresentation with regard to work, earnings, housing facilities, housing costs, and so forth should be scrupulously avoided.

Living and working arrangements for American migratory workers should compare favorably with those provided by contract between the United States Government and the governments of other countries supplying such workers.

Since to a large extent the need of migrant workers for food growing and processing is not of a temporary character nor for the duration of the war only, agencies interested in the welfare of these workers should seek not minimum standards alone but standards compatible with right working and living conditions.

Constant efforts should be made to improve working conditions that fall below accepted standards.

Estimates as to labor needs should be arrived at and made available by the canners early enough to make possible adequate programing of housing needs and other essential services for migratory workers. (Standards for these provisions should follow those outlined in this report.)

Orders from canners for migratory labor should not be filled until a check has been made of housing facilities and they are found to be satisfactory.

Working through the proper channels, insistence should be made that canneries having Government orders should at least meet minimum standards.

Coordination of the efforts of the many agencies concerned with the problems discussed in this report is necessary if the recommendations outlined are to be effectively carried out. A plan should be developed whereby the responsibilities of the several agencies, local, State, and Federal, whose activities relate themselves to these problems can be defined, whereby the proper agencies can be given full authority to investigate and make periodic inspections, and whereby adequate provision is made for the enforcement of their recommendations. Such a plan would offer a basis for united action on the part of both private and public agencies for attacking these problems in a constructive way.

Progress was made in the direction of cooperative endeavor when the joint survey of housing provisions and needs of migratory workers, referred to earlier in this report (page 19), was made by four Federal agencies. A report of the survey, including recommendations, was sent to the companies and to the various State and Federal groups concerned, and conferences were held with many of them to discuss the problems.

Two meetings called by the Director of the New Jersey Office of Civilian Defense have been held in Trenton for the purpose of coordinating State responsibility in these matters, and the process of developing a conference between Federal and State agencies is under way.

Initial contacts have been made with local, State, and Federal agencies concerned with living conditions for migratory workers in New York. It is expected that plans will go forward to meet the problems there and that improvement of conditions existing in certain places will be made long before next summer's inmigration of workers begins.

The New York Canners Association expects to spend some time during the less busy winter months in collecting material on housing for migratory workers, and this will be made available to the canners of the State. One company operating several canneries has already indicated its intention of undertaking the building of housing facilities this winter.

The agencies whose functions indicate a responsibility for the conditions under which migratory workers live and work include, among others, the United States Department of Labor (the Women's Bureau and the Children's Bureau in particular) and the State Departments of Labor; the War Manpower Commission and its United States Employment Service Division; the United States Public Health Service and the State Departments of Health; the Community War Services, the State Departments of Welfare, and the USO; the Extension Service of the United States Department of Agriculture and the State Departments of Agriculture; the National Housing Agency and Federal Public Housing Authority; the State Offices of Civilian Defense; Federal and State child-care agencies; and the State Departments of Education. To this list probably should be added representation from the procurement offices for the Army, Navy, and Lend-Lease, and certainly there should be added the names of the individual employers and the associations of canners and of farmers.

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UNITED STATES DEPARTMENT OF LABOR
FRANCES PERKINS, Secretary

WOMEN'S BUREAU
MARY ANDERSON, Director

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The Migratory Labor Problem in Delaware

By
ARTHUR T. SUTHERLAND

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LETTER OF TRANSMITTAL

United States Department of Labor,
Women's Bureau,
Washington, February 12, 1941.

Madam: I have the honor to transmit our initial study of migratory labor. This study was made in Delaware at the request of the Delaware Labor Commission, Board of Health, and Unemployment Compensation Commission.

The interviews were conducted by Carrie G. Hager and Mary Turner. The report was written by Arthur T. Sutherland.

Respectfully submitted.

Mary Anderson, *Director.*

Hon. Frances Perkins,
Secretary of Labor.

THE MIGRATORY LABOR PROBLEM IN DELAWARE

SALIENT FACTS

The migratory workers in Delaware are largely employed in canneries or on the nearby farms that supply the canneries with produce. Eight canneries were found to have camps for migratory workers in 1940 where the workers and their families could live during their stay in Delaware. The camps generally consisted of one or more frame buildings divided into single rooms. Beds or bunks with straw were furnished, the migrants supplying covers, but other furniture or household equipment usually was lacking or was of a make-shift character—rude tables, benches, boxes. Water was supplied by outdoor faucets and pumps. Many of the families were provided with oil stoves or brought their own stoves, but practically all camps furnished one or more stoves under sheds at which the people took their turns. Only three camps had electric light.

All the migrants were Negroes and included men, women, and children; the majority traveled in family groups, but a substantial proportion, roughly about one-fourth, were unattached individuals. Some groups had come to the Delaware camps as early as June, the largest numbers, however, arriving in the latter part of July or in August. Nearly all expected to remain at the camp until the end of the canning season, in most cases in October.

On the basis of number of persons, the most important States from which these people had come to the camp were Maryland and Florida, followed by Virginia, North Carolina, Delaware, and Alabama. Relatively few had come from seven other southern and eastern States, one even from the Bahama Islands. Six canners had obtained some of their migrants through a labor agent or their camp boss; these people were transported to and from camp in company trucks. The majority of the migrants, however, had come in private cars, a few by bus or train.

The employment situation was not very favorable for these migratory workers, being characterized by low cash incomes and much unemployment. Taking all wage earners together, family members and individuals without families, earnings in 1939, for the average of 28½ weeks worked, averaged $6.64 a week. and in the 8 or 9 months of 1940, for the average of 16½ weeks worked, week's earnings averaged $6.75.

THE MIGRATORY LABOR PROBLEM IN DELAWARE

INTRODUCTORY

Until recent years the extent of and the hazards created by the migratory labor movements were practically unknown to the general public and usually were ignored by State and Federal labor, health, and relief agencies. Since 1930, however, the depression, the droughts, and the extended use of agricultural machinery have caused an increase in the number of migrants so great that a large proportion of them have been unable to find sufficient employment to purchase even the minimum necessities of life. This has forced them, in ever-growing numbers, to live in unhealthy squatter camps, without money to buy food and clothing at the barest subsistence level, and has required them to go to relief agencies already overtaxed by the needs of local citizens. Consequently their problems have become of vital importance to the communities into which they move.

The conditions of destitution with which these agricultural migrants have had to cope, and which have been so poignantly publicized in recent years, have necessitated both State and Federal agencies to give increasing attention to the alleviation of their immediate sufferings, particularly to securing nutritious food and adequate housing and sanitation facilities, and to formulate plans to regulate the migration of workers considered necessary to seasonal industries, so that such pressing conditions will not continue to exist.

The hazardous plight of migrants has been excellently described as follows: "For them and for their families, constant shifting from place to place sets the patchwork pattern of life. The broken-down car piled high with meager belongings and the makeshift shanty town are its symbols. Low wages and long gaps between jobs keep most of them within the lowest income group in the Nation. At best they are hardly above the thin edge of distress, without margin for health, education, or other family needs. Any emergency—illness, added miles of travel— * * * deprives them even of such public aid as other families may turn to in times of want.

* * * * * * *

"Migratory agricultural workers and their families as a group are not protected under the Social Security Act [nor Federal or State wage-and-hour laws] for one or both of two reasons: Either they do not stay in one place long enough to establish the residence required for public assistance and public welfare and health services; or they are engaged mainly in occupations which are specifically excluded from the insurance [and fair-labor-standards] programs." [1]

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[1] Migratory Labor. A Report to the President by the Interdepartmental Committee to Coordinate Health and Welfare Activities, July 1940, pp. 1, 15.

The large majority of the reports relating to the migratory labor problem, whether by Federal, State, or private agencies, have been concerned with conditions in the Far West, Southwest, and "Dustbowl" areas, where the concentration of the problem has become so intense that it has threatened a complete break-down in the existing economic and social standards of those areas; relatively few of the reports mention or describe the migratory problem which exists, and is believed to be increasing, along the Atlantic seaboard.

However, fragmentary material obtained in a few more or less superficial surveys indicates that there are significant numbers of migrant workers and their families, estimated to be in the thousands, who each year follow the maturing sequence of crops from Florida north, many traveling as far as Maryland, Delaware, and New Jersey.

These migratory movements do not form a steady and constant stream but vary all along the route, with workers joining or leaving at places where seasonal work is available. Considerable numbers move only from one State to the next, and it is probable that no great proportion travel the entire distance from Florida to New Jersey, but many do go from southern States—Florida, Georgia, the Carolinas—into Maryland, Delaware, or New Jersey without stopping along the way.

The vast majority of these migrants are Negroes, and the movement includes men, women, and children, some traveling as unattached individuals but many moving as family groups. Most of them are employed in harvesting the seasonal crops or in the canning and packing plants that process the crops, but a substantial proportion find employment also in the seasonal fishing (oyster and crab) and construction industries for part of the year. The conditions under which these migrants live and work are known to be comparable to the distressful situations, described above, relating to other areas.

As a means to determine the scope and the nature of the migratory problem and to suggest and plan methods whereby the economic and social distress of these workers could be eliminated, an interstate conference on migratory labor, sponsored by the labor commissioners of Delaware, Maryland, New Jersey, and Virginia, was held in Baltimore in February 1940. Representatives of State labor, health, education, welfare, and agriculture departments, and of several cooperating Federal agencies, participated in the conference.

This conference recommended, among many other things, "That an up-to-date survey of the migratory labor problem, including the actual needs for migratory labor, be made in each of the four States by the appropriate agency, or agencies, assisted where necessary by Federal agencies." [2]

To carry out this recommendation, the Delaware Labor Commission, Board of Health, and Unemployment Compensation Commission requested the Women's Bureau of the United States Department of Labor to make such a survey in the labor camps operated by Delaware canning firms, which firms employ about 80 percent of all the migrants who work in the State.[3]

The survey was conducted in September 1940. A total of 14 canneries were visited by the Women's Bureau agents; 8 of them were found to have camps for migratory workers, and all these were scheduled. In 7 camps combined, data were secured for practically two-thirds (64 percent) of the migrants. In one large camp only about two-fifths of the total were scheduled. Effort was made to report on every child in the camp. All the migrants living in the camps at the time of the survey were Negroes; many came from nearby States, but substantial numbers reported that they came from as far as Georgia, Alabama, and Florida. Of the 562 persons scheduled by the Women's Bureau, 69 percent gave southern States (8 such States) as their permanent residence, 40 percent naming 4 States in the deep South, chiefly Florida.

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[2] Proceedings of Interstate Conference on Migratory Labor. Baltimore, Md., February 1940, p. 97.

[3] Ibid. pp. 22-23.

The data that form the basis of this report were obtained by the Bureau's agents direct from the canners and their camp deputies or bosses, and by personal interview with individual migrants. The information requested from the canners related to: Total size and composition of the cannery work force; total number of migrants living in the camp; usual practice of obtaining the workers; usual method of pay; extent of farm work by members of migrant families in each case where the canner owned or controlled the producing farm; and a brief description of the types of living quarters and camp facilities available to these migrant workers and their families.

Individual migrant workers were interviewed at the camp; the agents visited them early in the morning before the cannery was operating or late in the afternoon and evening after the day's work was done. In practically every case the information was from memory, as only an insignificant number had any written records of their earnings for work done previous to their arrival at the Delaware camp.

Questions were asked concerning: Age and sex of each person interviewed, and relation, age, and sex of other family members in camp; type of employment at time of the agent's visit; permanent residence; method by which they obtained employment; method of transportation to camp; occupational history of each worker during the year of 1939 and from January up to some time in September 1940. In addition, the persons interviewed who had children under 16 with them were asked where the children had attended school last, and whether they had attended regularly or had lost time because of the family travels or for other reasons.

When reviewing the analysis of the data reported by the workers, it must be borne in mind that the figures relating to the occupational histories are estimates, made orally, by the persons interviewed; in some cases, when giving the length of time worked, they stated a figure followed by the term "off and on," and in relation to earnings, "I earned about" such and such an amount. However, the agents, understanding the type of persons whom they were interviewing, were extremely careful in their questioning, and it is believed that the figures as presented in this report are reasonably accurate and may be accepted as indicating the work and earnings of these migrants during the period covered.

ANALYSIS OF DATA REPORTED BY CANNERS AND CAMP DEPUTIES

The data reported by the canners do not give a complete picture of the employment conditions in the canneries, as the questions were limited to the bringing out of pertinent data relating to the scope and nature of the migratory labor problem in each plant.

Products on which migrant labor was employed.

Obviously the number of workers employed depends largely on the number of products canned and the size of the cannery. There were wide variations in the products canned in the eight firms visited, but in most cases migratory labor was employed solely in the period when only one product was canned, or in the period when, with two or more products being canned, the seasons of the various products overlapped. In four of the camps most of the migrants arrived in June or July, and in four not until August; the migrants expected to remain at the cannery until anywhere from the 1st of October to about the 1st of November.

Two of the firms visited canned only tomatoes, the season in both cases lasting from about the second or third week of August to about the first of October. Two firms canned both peas and lima beans; peas were packed in the first half of June and lima beans from early August to late October. One of these firms employed migratory workers during both seasons, though there was considerable time between those canning periods when the plant was not operating; the other had migratory workers only in the lima-bean season, and a relatively small force, probably consisting of local workers, was employed on peas.

Three firms each canned three products. In one firm canning peas, stringless beans, and lima beans there was a short break between the canning seasons of the products. Some migrants arrived for the first season, in June, but others did not arrive until July and August. In another of these firms there was a considerable break between the packing of peas and that of corn, from the last of June to the middle of August, but the corn and tomato seasons overlapped. Figures on the number of employees indicate that many migrant men, though few or no women, are employed on all three packs. In the third firm canning three products local labor was employed on the early asparagus pack, and local labor and migrants worked later on the corn and the tomato pack, these two canned over much the same weeks.

The remaining firm put up seven products, and there was overlapping from the start of canning operations until the cannery closed in the fall.

Number and composition of the cannery work force.

In regard to the seasonal work force, canners were asked to estimate the proportion who were migrant workers and those who were local people or were brought in from nearby cities or farms. In each case the migrants were Negroes, but other groups consisted of both white and colored workers in five canneries and of white workers in three canneries.

In September 1940 the total force in the 8 canneries numbered about 2,066 workers, 648 men and 1,418 women. As shown in the summary following, the proportion of the men reported to be migratory workers varied from 15 to 35 percent in 4 canneries but was 50 percent or more in 4 canneries. Of the total men employed in all canneries, not far from one-half (46 percent) were migrants. Less than one-third of the women employed were migrants; in 5 canneries the proportion varied from only 10 percent to 35 percent, but it was 50 or 52 percent in 3 firms.

The numbers of men and women employed in the eight canneries and the estimated proportions of migratory workers are as follows:

Camp	Men		Women	
	Number employed	Percent who were migrants	Number employed	Percent who were migrants
Total	648	46	1,418	32
Camp: A	100	15	300	20
B	20	90	130	52
C	25	15	85	10
D	130	50	410	25
E	48	25	8	25
F	50	50	100	50
G	200	67	185	50
H	75	35	200	35

Roughly, the number of migrants employed in the 8 canneries totaled 300 men and 450 women.

Number of persons living in the camps in September 1940.

The figures concerning the total number of camp inhabitants are not exact, as in some cases both the canner and the camp deputy or boss reported that persons were continually arriving and leaving, and also that they did not attempt to keep a strict count on children, so that only close estimates were given.

In the 8 camps combined there were approximately 950 migrants; by camp the number varied from a low of 25 persons in 1 camp to a high of approximately 250 persons in another. In each of 4 camps there were over 110 but less than 175 persons; the remaining 2 had 30 and 75 workers.

Method by which canners obtained workers.

The method by which canners obtained their workers also differed widely among the various firms. In regard to local labor, that is, housewives, students, industrial and casual workers, and agricultural workers living nearby, three canners reported that they notified a few, but that the majority knew when to come in, as they were familiar with the crops or kept in touch with the firm; three reported that all local workers called; and two reported that they sent trucks to the nearby neighborhood or towns to collect them.

There was somewhat more variation in regard to the migrants, particularly since they were out-of-State workers. Two canners reported that the migrants just drift in looking for work, or come because they hear of work at the particular cannery from friends. One of these reported that many migrants came back year after year. Another canner reported that they came and applied, but that he sent a truck out once in order to get 8 or 10 additional men.

Each of the other firms, however, secured workers through an agent, or their camp boss acted as employment agent. Two firms secured migrants from Maryland; 1 contracted with a woman who also supervised the camp, paying $1 for each person collected; the other sent the camp boss out to gather workers. Both of these sent trucks to Maryland and transported the workers free of charge; the firms also send them back by truck at the end of the season. Another firm bargained with a man and sent out trucks to transport the workers to and from the camp free of charge; the majority of workers transported were from Virginia. Another firm had a bargain with a man in North Carolina, and this firm also sent a truck to transport the workers to and from the camp, the only charge in this case being a 50-cent ferry charge each way. The remaining firm also secured migrant workers through an agent, but in this case the agent owned the truck or trucks used for the transportation of the workers. The majority of the workers were from Florida and reported that they paid from $5.50 to $8 for the trip to the Delaware camp.

Wage payments for cannery work.

One firm paid hourly rates to all employees, but seven paid both piece and time rates. Piece rates were paid for peeling tomatoes and for sorting beans. The piece rates were as follows:

Peeling tomatoes:
- 1 firm 4 cents a bucket, amount not reported.
- 1 firm 4½ cents for 12 quarts.
- 1 firm 7 cents for 16 quarts.
- 1 firm 8 cents a bucket, amount not reported.

Sorting beans:
- 1 firm 12 cents a 14-quart bucket lima beans.
- 1 firm 12 cents a 10-quart bucket green beans, 5 cents a 10-quart bucket white beans, plus 2 cents for green beans if worker stays all season.
- 1 firm 13 cents for 18 pounds lima beans, plus 2 cents for staying all season.

Hourly rates of pay also differed considerably among the various firms. Men's usual hourly rates were:

1 firm 18 to 25 cents.
1 firm 20 cents, plus 5 cents for staying all season; 30 cents for a few.
1 firm 24½ to 30 cents.
2 firms 25 cents (in 1 the rates were reported by the workers).
1 firm 30 cents.
1 firm 30 to 35 cents; few at 40 cents.
1 firm 30 to 50 cents, average 35 cents.

Women's hourly rates of pay were:

1 firm 20 cents, plus 2½ cents for staying all season.
1 firm 20 to 23 cents.
1 firm 24½ cents.
1 firm 25 cents.
1 firm 25 cents for white women (rate reported by workers).
    22 cents for colored women (rate reported by workers).
2 firms 30 cents.
1 firm 30 cents for the majority, 32½ cents for a few,
    40 cents for foreladies.

In addition to cash wages, the migrant workers were given a room in the camp without charge. Water, usually outdoor faucets, also was supplied in each camp. One camp provided electricity and heat, and one provided electricity in each room, in each case free of charge. A third canner provided free electricity to part of the workers. In another camp the boss reported that electricity had been provided but the wires were torn out by the migrant tenants.

Extent of farm work on canners' farms.

Five of the canners reported that they did not own or control the farms that supplied them with produce. The other three controlled the farms, and two of these stated that only men were employed on farm work; the other reported that men were employed in harvesting asparagus, but that both men and women worked at picking string beans.

Types of living quarters and facilities furnished.

In general, the living quarters maintained at the camps were the usual unpainted frame type of building designed for only temporary use and not supplied with the sanitary facilities or household equipment ordinarily considered essential. The buildings were arranged in long rows or in small units grouped closely together; in both types the buildings were divided into single rooms, each with a door and usually only one window. In four camps no screens were provided, and one had an insufficient number, thus constituting a distinct health hazard, as this was the time of the year when flies are numerous and annoying.

Sleeping facilities provided consisted usually of built-in beds or bunks with some straw, the tenants providing their own covers. Tables and chairs were lacking in most cases, and only crudely made benches or boxes served as seats.

Drinking water was supplied by outdoor faucets, placed at intervals through the camp, and obtained from a nearby well or hydrant.

Cooking arrangements generally were inadequate. In one camp each room was provided with an oil stove for cooking, and in each camp a few families had their own oil stoves. In seven camps one or more cook stoves were provided by the employer. These cook stoves were community affairs and were in open sheds having a roof but in most cases no sides. The family groups without oil stoves took turns at cooking and then ate as comfortably as they could at the make-shift tables or benches.

Toilets also were out-of-doors; in some camps they were too few in number and offensive, but in others they were adequate, clean, and plainly marked for men and for women. About half the camps had colored supervisors. County officers were employed in two cases. One camp employed social workers in the busy season.

The foregoing is a general description of camp facilities, but as the camps differed in size and in the number and type of tenants, details for the various places may be of interest. The following paragraphs give the agents' description of the camps and their remarks concerning the various groups of migrants.

Camp A.[1]—This, one of the largest camps, consisted of four long frame buildings, divided into single rooms, each with two windows.

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[1] To avoid identification, the camps listed here as A to H are in different order from those listed on page 60.

The buildings were provided with screens at both doors and windows. There was also a rough porch. Some rooms housed as many as five or six people, but others only two or three, depending on size of family.

Two large stoves under a long open shed were provided for cooking. A few families had their own oil stoves. Water was secured from a faucet in the yard. Outside toilets were provided.

Of the migrants reporting the place of last employment, 15 percent had come to this camp from other points in Delaware, 8 percent from New York or New Jersey, 49 percent from Maryland or Virginia (chiefly Virginia), and 30 percent from Florida and other far southern States.

Camp B.—This camp, also a large one, consisted of five long rows of frame buildings, divided into single rooms. Each room had a door and one window, some of which were screened. The number of persons to a room varied from two to four or five; in some cases two families, or a family and a boarder, or groups of four single women or men, lived in a room.

Part of one building formed an open shed, under which were four large stoves where the families did their cooking. Many workers had their own oil stoves and cooked in their rooms. The company had a store and sold staples and candy, cigarettes, and soft drinks. The workers were allowed credit until they earned enough at the cannery to pay cash.

There were few chairs. The people sat on boxes or baskets and ate their meals at rough board tables. Water was obtained from hydrants. Three toilets, respectively for men, for women, and for children, were provided.

A Negro camp boss supervised the camp, assisted by regular men cleaners. Of workers reporting place of last employment, 6 percent had come here from Delaware, 5 percent from New York or Pennsylvania, 62 percent from Maryland, 8 percent from Virginia, and 19 percent from Florida or North Carolina, all but one from Florida.

Camp C.—This camp, of medium size, consisted of small units of frame buildings divided into single rooms. Some rooms had two windows, others one; all were screened.

The camp was not overcrowded; there were from one to four persons in a room. Electric lights were provided free of charge. For cooking, the company provided one main stove in a shed; it also supplied some of the tenants with oil stoves. The workers purchased their food at a store some distance from camp, but the company operated a small store, selling candy, cigarettes, and cold drinks.

The toilets, plainly marked for men and for women, were clean.

When work was slack the women made preserves for their own use, the company furnishing the firewood and all the tomatoes the women wanted. Nearly all these people—90 percent—came here from Maryland; only one who reported came from so far south as Virginia.

Camp D.—This camp, also of medium size, consisted of a number of frame buildings built in small units, well spaced for air and light and situated in a large yard that was clean and well kept. The buildings were in fair repair; however, the windows were not screened though there were many flies. Some of the rooms had electricity. One building, not divided into rooms, was occupied by a group of single men. The others were divided into rooms, each occupied by one family, varying in size from one to four persons. The camp did not seem overcrowded.

Cooking facilities consisted of brick ovens in a 3-sided building. A few of the families had their own oil stoves. Water was secured from hydrants placed at intervals through the yard. There were outside toilets, screened from the other buildings and plainly marked for men and for women. These were clean and well kept.

Seventy percent of the migrants came here from Florida, 16 percent from Georgia, the Carolinas, or Alabama, 12 percent from Virginia or Maryland, and 2 percent from widely separated localities.

Camp E.—This camp consisted of two buildings, one of frame construction and one of another type. They were close together and were long narrow buildings, divided into small dark rooms with doors opening into a narrow central corridor. Each room had one small unscreened window. The camp was dirty and flies were a nuisance.

From one to three or four people, never more than one family, lived in a room; they did their cooking there also, as the company furnished an oil stove to each. There were no outside stoves.

Toilets were near the buildings. They were plainly marked for men and for women, but were not clean.

Forty-two percent of the migrants came here from Maryland, 36 percent from Virginia, 13 percent from North Carolina or Florida, and only 8 percent from New Jersey or Delaware.

Camp F.—The several frame buildings of this camp were in small units fairly close together. They were divided into single rooms; no screens were provided, and the flies were bad. The number of persons to a room varied from 3 or 4 to as many as 10; many rooms had 2 families, 1 in the front of the room and 1 in the back, with a curtain stretched between.

The camp had one main stove out-of-doors under a shelter. Many of the workers had their own oil stoves with them. Water hydrants were at convenient intervals through the yard. The women complained that the toilets, located nearby, were dirty and offensive.

About 41 percent of the migrants came from Florida or Alabama, in equal numbers, 31 percent came from Maryland and 16 percent from Virginia, and 11 percent from other southern States. One worker came here from Massachusetts.

Camp G.—This camp consisted of a long, roughly built 2-story frame building divided into single rooms. There were only two or three persons to a room, as this was a poor season and at no time do they try to have many migrants. There were no screens in the windows.

One room was set aside as a community kitchen, with a large stove and a rough table. The workers complained of this, because some had to wait a long time for their turn at the stove. A couple of families had their own oil stoves. Water for drinking and washing was obtained from a well in the cannery yard about 200 feet away. The toilets were of the roughly-built outside type.

The agent who collected the workers was given the privilege of running a commissary at the camp. He sold soft drinks, cigarettes, and candy. About a fourth of the migrants (24 percent) had come to the camp from elsewhere in Delaware, 29 percent from Virginia or Maryland, and 47 percent from North Carolina or Georgia.

Camp H.—This camp, with comparatively few migrants at the time, had several frame buildings, divided into medium-sized single rooms. The buildings were in fair repair and had screens in most cases.

The number of persons in a room varied from one to as many as eight; several rooms contained two families.

Only one outdoor stove was provided, but several tenants had their own oil stoves. Water taps were placed at convenient places through the camp. There were outdoor toilets plainly marked for men and women; these were screened and clean.

Nine-tenths of the workers came to this camp from North Carolina, the remainder from Virginia.

ANALYSIS OF DATA REPORTED BY INDIVIDUAL WORKERS

In the 8 camps visited the Bureau's agents interviewed 299 persons, including 155 members of family groups representing a total of 418 persons, and 144 individuals traveling alone and referred to in this report as single persons. Thus the number of persons covered totaled 562, or approximately three-fifths of the 950 estimated by the canners and camp bosses to be in camp in September 1940. The number of persons represented on the Bureau's schedules varied by camp from 17 to 157; the number was less than 50 in each of two other camps and more than 80 in each of two others. The smallest group scheduled had 6 families and 2 single persons, in contrast to a total of 42 families and 38 single persons in the largest.

Composition of family groups.

As the majority of the migrants in the camp were members of families, and as each family group lived in 1 room, it is important to know more about the size of these various groups. Generally they were small families of only 2 or•3 persons, but, as shown in the summary following, as many as 10 families consisted of 5 or more persons and 16 were 4-member families. Much the largest group, 88 families, not far from three-fifths of the total, were 2-member families.

Size of family	*Number of families*	*Total persons*
Total	155	418
2 persons	88	176
3 persons	41	123
4 persons	16	64
5 persons	6	30
6 persons	3	18
7 persons	1	7

Unpublished tabulations show that 120 of the 155 family groups scheduled, including 20 of those with 4 or more members, 33 with 3 members, and 67 with 2 members, were normal families consisting of husband and wife or of husband, wife, and children. The remaining family groups were composed as follows: Mother and children; father and children; sisters; brothers; brother and sister; grandmother and grandson; mother, son, and grandson; sisters and nephews; and cousins.

Of the 418 persons in the 155 families, 174 were women, 149 were men, and 95 were children under 16 years old. Of the 144 persons traveling as single or individual persons, 67 were women and 77 were men.

Age of the migrants, by sex.

The 562 persons scheduled were divided almost equally as to sex—282 males and 280 females—and in broad age groups they differed little in distribution; for example, the males had 68 and the females 64 persons under 20 years, the males had 134 and the females had 140 at 20 and under 40, and the males had 80 and the females had 76 at 40 and over. A further break-down of the age groups, however, shown in the following summary, discloses significant differences. Of the 68 boys under 20 years of age, all but 12 were under 16; whereas of the 64 girls under 20 years, 25 were 16 or more; among those 20 and under 40 years, the men were almost equally 20 and under 30 years and 30 and under 40, but more than three-fifths of the women were below 30; while among those of 40 and over, only about one-fourth of the men, in contrast to two-fifths of the women, were as much as 50.

Because of the inclusion of children, the family groups appear to be younger than the single persons, as many as three-tenths being under 20 years and less than one-fourth being as old as 40, while only 7 percent of the single persons were less than 20, and 40 percent were 40 years or more.

TABLE 1.—*Age of migrants, by sex and type of group*

Sex and type of group	Total number of migrants	Number whose age was—					
		Under 16 years	16, under 20 years	20, under 30 years	30, under 40 years	40, under 50 years	50 years and over
Total	562	95	37	155	119	104	52
Male	282	56	12	69	65	59	21
Female	280	39	25	86	54	45	31
Family members	418	95	27	109	88	72	27
Single persons	144		10	46	31	32	25

Residence of the migrant workers.

Each person interviewed was asked what State he considered his permanent residence. Of the many who had been traveling for some years, a few had not returned to their residence in either 1939 or 1940, but had gone directly to Florida, and a few others had remained in Delaware or Maryland instead of returning to the South. However, the majority of these workers had been employed in the State of their residence at some time in the period covered. The largest proportions of the migrants, about 25 percent in each case, reported Maryland or Florida as their State of residence; these were followed by from 11 to 14 percent reporting their State as Georgia, North Carolina, or Virginia. Less than 5 percent of the total reported any other single State. The summary following gives the permanent residence of the migratory workers in Delaware camps.

State of residence	Family groups		Single persons
	Number	Persons	
Total	155	418	144
Alabama	7	20	5
Arkansas	1	2	1
Delaware	5	14	5
Florida	42	116	20
Georgia	19	46	17
Louisiana	1	3	
Maryland	36	110	30
New Jersey			1
New York	2	4	2
North Carolina	18	44	26
Pennsylvania	1	5	2
South Carolina	3	6	2
Virginia	20	48	30
West Virginia			1
Bahama Islands			2

Movements of the migrants, 1939 and 1940.

Considering these people as a group, their migrations were extremely complicated. The majority of those found in the Delaware camps do not appear to be connected with the groups of seasonal migrants who start their trek in Florida and follow the crop harvests north. Rather, most of the people had come direct to the Delaware camp from their home State, even when such State was Florida, Georgia, or Alabama. Very nearly all the people who claimed Maryland as their residence moved only in these two States, that is, from Maryland to Delaware and return.

A small proportion of the migrants interviewed may be considered as the truly seasonal migrant, travel histories for 1939 such as the following being not unusual:

Florida—North Carolina—New Jersey—North Carolina—Florida.
Florida—North Carolina—Virginia—Florida.
Florida—Virginia—New Jersey—Delaware—Florida.
Florida—Virginia—Maryland—Delaware—Florida.
Florida—Virginia—Delaware—Florida.
North Carolina—Virginia—Delaware—North Carolina.

However, the proportion of migrants who moved along with the crops, working in each of the coast States on the way, is surprisingly low. Possible reasons may be the type of work, that is, cannery as well as farm work in Delaware, and also the fact that some seasonal work is available in Delaware as early as June and July, or a period corresponding to that when seasonal work is available also in the more southern States.

On the other hand, the proportion of the people who were in camp in 1940 but who had not moved out of their home State in 1939 was very striking; and it appears that the turn-over of individuals, at least between 1939 and 1940, was extremely high.

As many as 222 members of 95 family groups and 77 single persons were in only one State in 1939, most of them in their home State; this means that more than half of the people in the Delaware camps in 1940 were not part of the migratory movement in 1939. The number who were in Delaware in 1939 totaled 191 family members and 59 single persons.

The large number who came to camp in 1940 but not in 1939 may be due in part to three factors: (1) The recruiting practices of the labor agents who collect the workers, that is, the agents not going to the same place each year or not securing the same workers. Thirty-six family groups and 36 single persons not in camp in 1939 reported that in 1940 they obtained work through the company agent or came to camp in the company truck; (2) the low earnings in Florida in the 1939–40 winter, caused by lack of work due to the frozen crops, may have led these workers to migrate in 1940 in order to get work, whereas in years with good crops migration was not necessary; and (3) the poor year in Maryland and Virginia oyster fisheries in 1939–40 may have caused many migrants to look for other work to supplement the earnings received in their usual employments.

If reduced earnings in their usual work led migrants to Delaware canneries in 1940, the result must have been disappointing to many of them. Some crops were damaged also in Delaware, and cannery work was neither plentiful nor steady in 1940. Worker after worker stated that they had obtained very little work, "only 2 or 3 days in weeks." A typical example is presented in the following case history.

Mr. and Mrs. A from Annapolis, Md., a young couple aged 30 and 26 years, did not migrate from their home in 1939, but in 1940 had joined the migrant group. Mrs. A did housework by the day throughout 1939. For only about 3 months of that year was she able to obtain fairly steady employment at rates ranging from 15 to 25 cents an hour; the rest of the time she had only a day's work now and then. Her husband shucked oysters or got odd jobs on nearby farms, depending on the season. Neither of these occupations afforded very full or steady employment. The combined earnings of this couple for the year 1939 were about $550. By the middle of March 1940, when the oyster season was about over, Mr. and Mrs. A decided to go to Delaware, where friends had told them they could get work picking berries. From that time until interviewed in September, they had been migrants living in company camps; for 6 weeks they picked berries in Delaware, then they heard there was work in Virginia grabbling potatoes and for 2 weeks they worked there, then they traveled to Maryland to pick cucumbers for 3 weeks, and next they signed up to go on a company truck to a tomato cannery in Delaware. They had been there about 5 weeks at the time of interview. Mrs. A explained that by moving from one place to the next they had so far always obtained work but very rarely had the work been full time, with the result that their combined earnings for the first 9 months of 1940 had amounted to only about $330, of which Mrs. A had earned approximately $100.

Due to the movements of the workers, it was to be expected that there would be a discrepancy between the number reporting a particular State as permanent residence and the number coming from that State directly to Delaware. From the summary following it is apparent that the numbers coming to Delaware directly from the more northern States, Maryland and Virginia, are larger than the numbers reporting those States as their permanent residence, whereas the proportions are smaller for North Carolina, Georgia, and Alabama. There was less difference in the case of Florida because workers went to Florida for the winter though some other State was their residence. The summary following shows the last State the migrants had visited prior to their arrival in Delaware. Several of the family groups were not traveling as a unit before coming to Delaware, so the family is counted only once but the individual members are credited to the State from which they came.

State last visited	Family groups		Single persons
	Number	Persons	
Total	155	418	144
Alabama	5	15	1
Delaware	7	20	6
Florida	42	106	22
Georgia	3	7	4
Maryland	55	155	57
Massachusetts		1	
New Jersey	2	6	5
New York	1	2	1
North Carolina	11	32	18
Pennsylvania	1	5	3
South Carolina	1	2	1
Tennessee	1	2	
Virginia	26	65	25
Bahama Islands			1

The general direction of the migrations has been given, but it is important to know also the number of States visited by these people. If a State was visited more than once in a period, it has been counted each time; but a State has not been counted unless the person reported an actual stop in the State. For example, a movement from Florida to Delaware and back to Florida is counted as only three States visited, and the States between these, which were traveled through, are not counted.

In 1939 as many as 43 members of 16 family groups and 8 single persons visited either 4 or 5 States, and as many as 145 members of 46 family groups and 53 single persons visited 3 States; many of this latter group traveled only from their home State to Delaware and return.

The 1940 record is, of course, not complete, as practically all expected to leave the camp in October or November. However, the 1940 figures indicate greater movement than those for 1939; crops were said to be poor "from Florida up," and crab and fish work also was slack. All but the few already in Delaware had moved this year, and less than half the group moved in 1939.

By September 1940, 29 members of family groups and 15 single persons had been in 4, 5, or 6 States, and as many as 73 family members and 22 single persons had visited 3 States. The summary following shows the number of States reported by the migrants as visited in 1939 and from January to September 1940.

Number of States visited	1939		1940	
	Family members	Single persons	Family members	Single persons
1	222	77	21	6
2	8	5	295	101
3	145	53	73	22
4	30	5	19	10
5	13	3	7	4
6	----------	----------	3	1
Not reported	----------	1	----------	----------

Method of obtaining work.

As many of these people came from distant places, it is interesting to know how they came to find their way into these Delaware camps, that is, whether it was an intentional move on their part because they knew definitely there was work, or whether the move was by chance.

Though 6 canners reported that an agent was sent out or commissioned to secure migratory workers, only 89 family members and 35 single persons, just over one-fifth of the total, had secured work through the company man; 9 family members and 7 single persons had been employed by another branch of the same firm that operated the Delaware camp in which they were scheduled.

The method of obtaining work probably was more haphazard in the case of other workers. Eleven family members and 20 single persons definitely stated that they were "just looking for work" and happened to ask for work at the cannery. The others reported either that they had been to the same camp previously—some only once before, but many regularly for 5, 10, or more years—or that they had heard of the particular camp from friends or relatives who had been there.

The following description illustrates the more or less haphazard method of obtaining work, as well as other aspects of migrant employment.

The B family, whose home is in Florida, heard through other workers with whom they were picking beans in Florida that there was work to be had in North Carolina picking potatoes. The bean-picking season had yielded so little that Mr. and Mrs. B had been obliged at the first of the year to take their 14-year-old son from school to help them. At the end of April they took their other child, a 12-year-old boy, out of school, packed up their belongings, and went to North Carolina. For about a month all members of the family but the 12-year-old had employment picking potatoes. Then this job petered out and word got around that there was similar work to be had in New Jersey. Again the B family packed up and went to New Jersey for another month's employment. Potato picking brought the family only about $60 in 2 months of joint effort, bean picking had yielded about $70 over a 6-week period, and on these jobs there was no supplement in the form of free camps. In New Jersey the family heard of work in Maryland canneries, so they made their way to the Eastern Shore. But Mrs. B was the only member of the family who could find a job there. She peeled tomatoes in two different canneries, earning only about $27 in 2 months' time as work was not steady. Then again through fellow workers the news was spread around that a Delaware cannery had work, and once again the B family took to the road, getting a ride with friends by sharing expenses. They had been at the Delaware cannery about 3 weeks when interviewed and all but the 12-year-old son were employed. Mrs. B was peeling tomatoes, Mr. B was a general laborer in the cannery, and the 14-year-old boy was picking tomatoes on a nearby farm. Their combined earnings for the 3-week period had amounted to about $70. As Mr. B explained: "We have been following around from one place to another; we would hear of work, get there, and then couldn't get any to speak of."

Mode of transportation to camp.

Few migrant workers earn enough to pay for train or bus fare, so if the employer does not send out trucks the workers usually manage to buy second-hand "rattle-traps" or "jalopies." To save on transportation costs, they crowd into their cars as many people as can possibly get in, pile their meager belongings on running boards and fenders, and off they go.

The means of transportation for approximately half the migrants interviewed was a private car; only 40 family members and 31 single persons had come by bus or train, and 139 family members and 53 single persons had come by company truck. Of this latter group, 10 family members and 4 single persons paid a 50-cent ferry charge; 1 single person paid a fare of $3; and 18 family members and 6 single persons a fare of from $5.50 to $8 for each grown person. The remaining 111 family members and 42 single persons were transported to camp free of charge and stated that they expected to go back the same way at the end of the season. Seventeen family members and 13 single persons reported that they begged rides when moving from one place to another.

As shown in the following table, there were 99 persons who came in their own cars; of these, 66 had paid their own gas and other expenses and 33 had transported others who helped to pay for the gas. As many as 160 had obtained transportation with someone else; 53 of these were transported free of charge, but the others helped to pay for the gas.

Method of transportation	Family groups		Single persons
	Number	Persons	
Company truck	55	139	53
Free	42	111	42
Paid fare	9	18	7
Paid ferry charge	4	10	4
Bus or train	13	40	31
Begged rides	7	17	13
Had own car	32	96	3
Paid all expenses	20	63	3
Others helped pay for gas	12	33	
Rode in other car	45	119	41
Free	15	33	20
Shared cost of gas	30	86	21
Not reported	3	7	3

Types of employment in September 1940.

Of the 469 persons 16 years old and over, that is, of working age (including 2 who were working at 15 years), only 73 were reported doing other than cannery work or were not employed at the time of the interview.

Thirty-four persons were employed at other types of work, as follows:

6 worked in the camp (cook 3, camp boss 2, laborer 1).
20 were working on nearby farms.
8 were employed outside the camp:
    2 were doing housework.
    2 were employed in an experiment station.
    1 was doing general factory work.
    1 was in construction work.
    1 was in a restaurant.
    1 was doing odd jobs.

There were various reasons why the remaining group, 39 persons, were not at work, but the largest number, 29, were not employed because no work was available, or they had arrived only a few days previously, or no reason was given. Of the other 10 persons 3 were sick, 1 was too old, 2 were taking care of infants, and 4 were unable to secure work because they did not have their Social Security card with them or had no work certificate.

Earnings and time worked by migrants.

The significant expression "low wages and long gaps between jobs" has been widely used in referring to the work opportunities of migrants, and it certainly is characteristic of the 1939–40 work histories of these migrants covered by the survey.

The particular case of the C family that follows is perhaps extreme, but it points up sharply the low earnings and long gaps in employment.

The C's, husband and wife, aged 42 and 35, were tenant farmers in Alabama in 1939. They got free rent, their vegetables, and about $70 in cash, $10 of which came from Mrs. C's employment for 3 weeks as a bean picker. In 1940 Mr. C got odd jobs on farms at $1.50 or $2 a day. This brought in about $50 during the first 6 months of the year, and Mrs. C again earned $10 picking beans. Then they heard of work in Delaware and took to the road with friends, sharing the expense of their friends' car by paying for part of the gas and oil. From about the middle of June until nearly the middle of September, when they were interviewed, the C's had very little work, Mr. C getting 3 weeks picking beans, Mrs. C a total of 6 weeks at picking and sorting beans. Their combined earnings in Delaware were $35, making a total of less than $100 for the first 9 months of 1940.

The earnings and time-worked data for 1939 were complete enough to be tabulated for 404 wage earners, comprising with the non wage earners a total of 510 persons. For the 8 or 9 months in 1940 (the survey was made in September), data were secured for 434 wage earners, comprising with the non wage earners a total of 531 persons.

In the table following the earnings and time worked are tabulated for families of two or more persons by size of family and number of wage earners.

Table 2.—*Average earnings per family, year's and week's, and average weeks worked, by size of family and number of wage earners, 1939 and 1940*

1939

Size of family and number of wage earners	Number of families reporting	Average year's earnings per family	Average week's earnings per wage earner	Average weeks worked per wage earner
2-person family:				
1 wage earner	11	$161	$6.05	26.6
2 wage earners	67	346	6.11	28.3
3-person family:				
1 wage earners	4	421	10.59	39.8
2 wage earners	28	386	6.88	28.1
3 wage earners	3	467	8.20	19.0
4-person family:				
1 wage earner	5	253	7.00	36.2
2 wage earners	10	347	6.27	27.7
3 wage earners	1	426	6.45	22.0
4 wage earners	1	435	4.31	25.3
5-person family:				
2 wage earners	3	414	8.40	24.7
3 wage earners	1	220	3.67	20.0
5 wage earners	2	940	7.81	24.1
6-person family:				
1 wage earner	1	250	8.33	30.0
2 wage earners	1	338	3.93	42.0
3 wage earners	1	629	6.55	24.0
1940 [1]				
2-person family:				
1 wage earner	8	$83	$5.55	15.0
2 wage earners	73	212	6.45	16.4
3-person family:				
1 wage earner	4	218	8.21	26.5
2 wage earners	25	225	6.57	17.1
3 wage earners	7	322	8.00	13.4
4-person family:				
1 wage earner	2	137	5.07	27.0
2 wage earners	12	233	6.90	16.9
3 wage earners	2	246	4.42	18.5
4 wage earners	1	346	4.55	19.0
5-person family:				
1 wage earner	3	226	8.15	27.7
3 wage earners	1	145	4.39	11.0
5 wage earners	2	485	7.40	13.1
6-person family:				
2 wage earners	2	196	4.72	20.8
4 wage earners	1	171	5.50	7.8

[1] From January to various dates in September, according to date of agents' visit.

The single migrants, as distinct from members of families, had average earnings in 1939 of $208, averaging, for the 30 weeks worked, $6.92 a week. In the 8 or 9 months of 1940, in which they averaged 17 weeks of work, these single persons had average earnings of $120, or $7.18 a week. Taking all wage earners together, family members and single persons, the earnings in 1939, for the average of 28½ weeks worked, averaged $6.64 a week; in 1940, for the average of 16½ weeks worked in the incomplete year, week's earnings averaged $6.75.

It is apparent that the average week's earnings were practically the same in the 2 years—$6.64 and $6.75—and that the average weeks worked comprised roughly half of the period covered, but slightly better in the earlier year; that is, of the 12 months reported for 1939, time worked averaged 6½ months, but of the period in 1940 of January to various dates in September the average time worked was not quite 4 months.

In 1939 only 12 families of 2 or more persons received as much as $600 and only 39 earned $400 and under $600. At the other extreme of the wage scale were 10 families who received less than $100 and 23 families who earned $100 but under $200.

These workers had relatively little employment as well as low wages. In 1939 the average number of weeks of employment per wage earner varied from 19 to 42. In 7 of the family groups as classed in the table the average employment per wage earner was less than 26 weeks, that is, less than 6 months. The average week's earnings per wage earner ranged from $3.67 to $10.59 in the various classes.

There were many variations among families of the same size. One family of six persons had total year's earnings of $250 when only one person worked; another earned $629 when there were three wage earners but fewer weeks. In six 5-member families the year's earnings were $220 for a family with three wage earners at 20 weeks, $414 for three with two wage earners at 25 weeks, and $940 where there were five wage earners at 24 weeks.

In 1940 only 11 families earned as much as $400 in the 8 or 9 months and only 63 earned $200 and under $400. The average time worked per wage earner varied, by family class, from almost 8 to almost 28 weeks. Average week's earnings per wage earner in 1940, also by family class, ranged from $4.39 to $8.21; in four family groups as classed by size and wage earners, week's earnings averaged less than $5; in three others as much as $8.

The wage earners were divided almost equally as to sex, but in the Delaware camps and in all combined the earnings of men and of women differed traditionally. In 1939 men averaged 4.7 more weeks of work in camps than women averaged, the figures being respectively 14.4 weeks and 9.7 weeks, and men's weekly earnings averaged $8.01 in contrast to women's $6.89. In the 8 or 9 months of 1940 men had averaged 8.1 weeks of work in camps and women had averaged 5.7 weeks, and men's earnings had averaged $7.53 a week in contrast to women's $5.20. The figures on men's and women's earnings in camps in the various States are as follows:

TABLE 3.—*Average earnings, year's and week's, and average weeks worked, by sex and by location of camp, 1939 and 1940*

Location of employment	Men				Women			
	Number reporting earnings in camps	Average earnings for the period	Average week's earnings	Average weeks worked	Number reporting earnings in camps	Average earnings for the period	Average week's earnings	Average weeks worked
	1939							
Total employment in camps	[1] 85	$116	$8.01	14.4	[1] 94	$67	$6.89	9.7
Employment in Delaware camps	82	92	8.60	10.5	91	54	7.54	7.2
Employment in Maryland camps	5	32	5.27	6.0	11	34	5.07	6.7
Employment in Virginia camps	6	68	4.83	14.0	4	24	6.79	3.5
Employment in Florida camps	12	131	7.80	16.8	10	76	5.44	13.9
	1940 [2]							
Total employment in camps	[1] 211	$62	$7.53	8.1	[1] 214	$29	$5.20	5.7
Employment in Delaware camps	208	54	7.89	6.8	212	24	5.27	4.5
Employment in Maryland camps	13	31	6.72	4.6	23	21	4.97	4.2
Employment in Virginia camps	20	26	7.87	3.4	15	20	5.10	4.0
Employment in Florida camps	12	43	4.31	10.1	9	29	4.35	6.7

[1] Details aggregate more than total because some people worked in more than one State.
[2] From January to various dates in September, according to date of agents' visit.

In 1939 the migrant women averaged only $5.07 a week while in Maryland camps and only $5.44 a week in Florida, but in Virginia they averaged $6.79 and in Delaware $7.54. The men's average week's earnings also varied, as follows: $4.83 in Virginia, $5.27 in Maryland, $7.80 in Florida, and $8.60 in Delaware.

The incomplete figures for 1940 indicate that men's average week's earnings were lower in Florida and Delaware and were higher in Virginia and Maryland than in 1939; women's were lower in each State than in 1939, varying from $4.35 in Florida to $5.27 in Delaware.

Obviously, such irregular and low-paid employment makes it difficult if not impossible to secure even the barest necessities of life. An insignificant number of persons reported that they had applied for relief or W. P. A. work, but several stated that they had lived with relatives or friends or had been helped by such persons.

The figures make it clear that these workers must be given attention by State and Federal agencies if they are to have a standard of living that includes sufficient food and clothing, sanitary housing facilities, and, probably what they have never had before, adequate medical treatment.

SCHOOL CHILDREN IN DELAWARE LABOR CAMPS

In the 155 family groups there were only 95 children, and 61 of these were of school age, that is, 6 and under 16 years. Data relating to these children are the basis of this section of the report.

The number of family groups with school children totaled 43; each of 2 families reported 3 children, each of 14 reported 2 children, and each of 27 reported 1 child.

Sex and age.

Of the 61 children of school age reported, 40 were boys and 21 were girls. The following summary shows the ages of the 61 children.

Age	Boys	Girls	Age	Boys	Girls
Total	40	21	10 years	3	3
			11 years	2	1
6 years	5	6	12 years	5	3
7 years	4	3	13 years	6	1
8 years	6	1	14 years	3	------
9 years	3	1	15 years	3	2

School attendance.

Concerning the schooling of these children, the family member interviewed was asked where they went to school in the 1938–39 and 1939–40 school years and if they attended regularly. These school children have been classified according to school attendance, and the ages of the children in each group will be given in this analysis.

Practically all the persons interviewed stated that they would remain in camp until the canning season was over, October 1 to 15. As this is generally from 2 to 4 weeks later than the opening of schools, it is apparent that the children will miss some school days unless they attend the Delaware schools.

The first group comprises nine children 6 years old who had not been to school previously. All of these were to attend school this year, but they would not start until they left camp, that is, they would not attend Delaware schools for the last few weeks in camp. Of this group one was a Delaware resident, two were from Maryland, one each from Virginia and North Carolina, two from Georgia, and two from Florida. None expected to leave camp before October.

The second group comprises 6 children who had gone to school regularly in previous years and who would not miss any school this fall. Two of these were 8 years old, one was 12, one was 13, and two were 15. Two of these children, one 13 and one 15, were in a family that lived in Delaware all year; they were in a camp scheduled before school opened, but they expected to leave when school began. At the time of the agent's visit the 15-year-old boy was picking tomatoes on a nearby farm. His wages were low, from 50 to 75 cents for a 5-to-6-hour day or $1 to $1.50 for a full day. Work was irregular, varying from 2 to 5 days a week. The other children were in camps visited later in the month, and were already attending school. Two had attended school in Florida in 1938–39 but had lived continuously in the Delaware camp since June 1939 and expected to stay this winter. The other two had started school in Delaware but will transfer to their permanent residences, Florida and North Carolina, at the end of the canning season.

The third and largest group includes children who attended school regularly in previous years, but who will lose some time this year because of not returning until after school has opened. Many of the persons interviewed stated that the time between the opening of school and their departure from camp was too short to have the children entered in the Delaware school. The person interviewed in the Alabama family said the two children may enter the Delaware school, as it had not been decided whether the family would stay in camp all year or would return to Alabama.

None of these children were working at the time of the visit to the camp. Five children in two Maryland families had picked berries after school and on Saturdays in May and June but did not lose any time at school.

The ages of these 30 children and the States where they attend school are shown in the following summary.

Age	Number	Maryland	Virginia	North Carolina	Alabama	Florida
Total	30	12	4	1	2	11
6 years	2					2
7 years	6	2	1		1	2
8 years	4	1		1	1	1
9 years	2	1				1
10 years	4	1	1			2
11 years	2	1				1
12 years	6	3	1			2
13 years	2	1	1			
14 years	1	1				
15 years	1	1				

The next group is composed of seven children who attended school but who had been in camp each year until after the canning season was over and therefore had lost some time each fall. They expected to do so again this year. Their ages and the States where they attend school follow:

Age	Number	Pennsylvania	Maryland	Florida
9 years	2	1		1
11 years	1			1
12 years	1	1		
13 years	1		1	
14 years	1	1		
15 years	1			1

The next class comprises two children who lost time from school in both spring and fall because the family left their winter residence before school was out and returned after school began. One was a 10-year-old boy who attended a Virginia school each year from October to May; he was still in the first grade. The other was a 13-year-old girl who attended school in Florida.

The final group is of seven children who missed school most of the previous year or who had quit school permanently. These will be considered individually.

One 8-year-old boy attended school in Virginia only half of the 1938–39 and 1939–40 school years; work was so poor that the family could not buy clothes for the boy, so he had to stay home in cold weather.

Two boys, aged 10 and 7, of a Florida family attended school regularly until November 1939, when work got so bad that the family had to move to a farm looking for work. As this was 6 miles from the nearest school, it was too far to send the children.

A 13-year-old boy in a Florida family was taken out of school early in 1940 when it became necessary to migrate north because work was poor. Two other boys, 13 and 14, of Florida families were taken out of school late in 1939 because work was so slack that it became necessary for the boys to help to make a living. The 14-year-old boy was picking tomatoes on a cannery farm in September; wages were from $1 to $1.50 for a full day of work.

A 15-year-old girl from a Maryland family left school in May 1940 because she needed clothes and had to go to work to get them.

From this discussion it is apparent that relatively few children worked, but during the current year the majority of them were obliged to lose some time from school because the parents were staying in camp until after the opening of school.

Compared to the large number of families, 155, in the camps visited, the number of children appears small. However, 7 of the persons interviewed reported that they left their children with relatives or friends, some remarking that the camps were not places for children to live in. Each said that the children of school age attended school regularly. In the winter months these families resided in Maryland (2), Delaware, Virginia, North Carolina, Louisiana, and Florida.

It was said by the workers that the canners apparently do not welcome children; that there is always the possibility of illness and that on account of the child-labor law they want no question as to whether or not the children work in the cannery.

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51
mimeograph
copy
(Oct. 2, 1943)

The Oyster-Shucking Industry along Delaware Bay
in New Jersey (Oct. '43)

(Only copy in McGraw's files)

52

WPA STUDY ON DEFENSE MIGRATION AND LABOR SUPPLY
(Survey covers workers who had moved in since October 1940)

15

(52)

City, with No. of families and No. of workers	Date of survey (all in 1941)	% women were of all workers in migrant families	% of workers who were housewives	Average age of workers		% of women reporting se unemployed & seeking work	% of m reporti se une ployed & seekin work
				Women	Men		
Ark. Fort Smith 1500/1500	Sept.	12	3	23.7	33.7	24	15
Conn.-Bridgeport 5100/6000	Nov.	18	2	24.0	27.5	10	2
Ga. -Macon 1800/2050 (Negroes incl.) 20% of all migrants	Sept.	28	6	23.8	29.8	23	6
Augusta 2200/2400 (17% Negro)	Oct.	17	3	24.5	31.7	22	3
Ill.- Chicago 11,300/12/100	May	NR	NR	NR	NR	NR	NR
Ind.- South Bend 2600/2700 (2% Negro)	Nov.	15	1	25.2	32.6	15	2
Indianapolis 5200/5100	Oct	15	1	24.2	30.0	15	4
Fort Wayne 1800/1600	May	NR	NR	NR	NR	NR	NR
Iowa- Burlington 2800/2700	Nov.	10	2	27.1	34.7	27	1
Des Moines 3200/3400	Nov.	25	3	23.3	32.0		
Kansas-Wichita 12,800/13,000	Sept.	13	1	NR	NR	23	11
Maine-Portland So. Portland 1600/1700	Oct.	15	3	26.9	33.0	14	3
Mich.-Detroit 16,300/16,300	June	17				17	8
Penn.-Phila. 10,900/12,900	Sept.	22	1	24.1	31.0	23	4
Md. -Baltimore 15,700/16,000 (11% Negroes)	Sept.	10	2	NR	NR	1[illegible]	2
Mo. -St. Louis 8,000/11,200	Nov.	21	8	26	32.2	38	10
S.Car.- Greenville 1050/1090	Sept.	28	3	-	-	15	5
Tenn.-Nashville 2800/3000	Sept.	28	2	25.2	31.3	9	4
Texas-Corpus Christi 2900/3200 (Mexicans 10%)	Oct.	17	1	24.9	33.3	25	5
Houston 6400/7100	Oct.	19	2	24.0	29.9	24	8
Wichita Falls 2100/2200	Oct.	11	2	24.1	33.7	21	5
Ohio -Akron 1200/NR	April	NR	NR	NR	NR	NR	NR

Summary taken off by R N from WPA reports

WPA STUDY ON DEFENSE MIGRATION AND LABOR SUPPLY

Women's Bu Labor

[Public Law 554—77th Congress]

[Chapter 312—2d Session]

[H. R. 6293]

AN ACT

To establish a Women's Army Auxiliary Corps for service with the Army of the United States.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the President is hereby authorized to establish and organize in such units as he may from time to time determine to be necessary a Women's Army Auxiliary Corps for noncombatant service with the Army of the United States for the purpose of making available to the national defense when needed the knowledge, skill, and special training of the women of this Nation. The total number of women enrolled or appointed in the Women's Army Auxiliary Corps shall not exceed the number authorized from time to time by the President, and in no event shall exceed one hundred fifty thousand.

Sec. 2. From women citizens of the United States, the Secretary of War is authorized to appoint the Director and such Assistant Directors as he from time to time may deem necessary or advisable, all of such appointees to serve during the pleasure of the Secretary. The Director shall receive a salary of $3,000 per annum, together with such other allowances as may be provided for hereinafter. The Director, under the direction of the Chief of Staff of the Army of the United States, shall advise the War Department on matters pertaining to the establishment of the Women's Army Auxiliary Corps; shall operate and administer the corps in accordance with normal military procedure of command and administration and such regulations as may be prescribed by the Secretary of War; shall make recommendations as to plans and policies concerning the employment, training, supply, welfare, and discipline of the corps; and shall perform such other duties as may be prescribed by the Secretary. Each Assistant Director appointed pursuant to this Act shall receive a salary of $2,400 per annum, together with such other allowances as may be provided for hereinafter. Each Assistant Director shall perform such duties as may be prescribed by regulations published by the Secretary of War.

Sec. 3. The Secretary is authorized to establish and maintain such number of schools as he may consider necessary for the purpose of training candidates for officers of the corps. The Secretary may establish by regulation the qualifications for entry into such schools, the course of study to be pursued, and the requirements for graduation therefrom. Candidates for such schools may be selected from women volunteers who are citizens of the United States and during their attendance at such schools shall be furnished living quarters, uniforms as hereinafter provided, medical and dental service, medicines, medical and hospital supplies, hospitalization, subsistence, texts, neces-

MILITARY SERVICE (WOMEN) - 1942

Women's Bu Labor

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SEC. 4. The Director, each Assistant Director, and each officer of the corps shall receive allowances in lieu of rations at the rate of 60 cents per day and adequate quarters: *Provided*, That when adequate quarters are not furnished, the Director shall receive in lieu thereof the sum of $100 per month, an Assistant Director shall receive in lieu thereof the sum of $80 per month, and all other officers shall receive the sum of $40 per month. The adequacy of quarters furnished shall be conclusively determined in accordance with such regulations as may be issued by the Secretary.

SEC. 5. The Secretary is authorized to have enrolled in the corps, in addition to the Director, Assistant Directors, and officers hereinabove provided for, by voluntary enrollment, women of excellent character in good physical health, between the ages of twenty-one and forty-five years and citizens of the United States. The personnel of the corps so enrolled shall be distributed in the grades of first leader, leader, junior leader, and auxiliary, and those in the grade of auxiliary may be assigned ratings as specialist first, second, or third class, in accordance with regulations prescribed by the Secretary of War, who shall have complete authority to define the qualifications for all such leaders and specialists. The pay of first leaders shall be $864 per annum, of leaders $720 per annum, of junior leaders $648 per annum, and for auxiliaries not otherwise classified $21 per month for the first four months of service and $30 per month thereafter. Specialists of the first class shall be paid, in addition to their base pay, the sum of $15 per month, specialists of the second class shall similarly be paid $10 per month, and specialists of the third class shall similarly be paid $5 per month.

The Secretary shall provide quarters for the members of the corps so enrolled either on established Army posts, camps, or stations, or on those to be established, or in such other places as he may direct, and may use any of the facilities of the Army for such purpose: *Provided*, That when quarters are not available the Secretary may provide by regulation to pay allowances in lieu thereof to members other than the Director, the Assistant Directors, and the officers at the rate of $1.15 per day.

SEC. 6. The Secretary shall procure and furnish subsistence to all members of the corps, exclusive of the Director, Assistant Directors, and officers, which shall conform so far as is practicable to the subsistence of the Army: *Provided*, That when subsistence in kind is not furnished, the Secretary, by regulation, shall provide payment of allowances in lieu thereof.

SEC. 7. The Secretary shall prescribe the form of oath which shall be required of all the members of the corps and shall by regulation provide for the induction, including fingerprinting, of all members of the corps. The term of service for all members of the corps shall be one year: *Provided*, That the Secretary may discharge any member for cause, disability, or for the convenience of the Government: *And provided further*, That in time of war, or of national emergency declared by Congress or the President, the Secretary may, by order, extend the term of service to include the period of the war or national emergency plus not to exceed six months, and each contract of enrollment or certificate of appointment shall contain a statement to that effect.

SEC. 8. The Secretary shall prescribe uniforms, insignia, accessories, and equipment for the corps and shall procure and furnish to all members thereof, including the Director, Assistant Directors, and officers, such uniforms, headpieces, shoes, ornaments, insignia of rank and accessories, as well as such organization equipment and supplies, as may be required. The responsibility and accountability of the various individuals and officers for individual clothing and equipment, and for organization equipment and supplies, shall conform so far as is practicable, to the laws and regulations pertaining to the Army in like cases.

SEC. 9. The Secretary shall prescribe regulations for travel and for the payment of travel allowances, including travel allowances from the place of discharge to the place of acceptance for enrollment or appointment, and such regulations and allowances shall be similar to those for travel of the Army.

SEC. 10. The Secretary shall provide medical and dental services, hospitalization, medicines, and medical and hospital supplies for each member of the corps for injuries, sickness, and disease during the time such member is actually serving her enrollment or appointment, such services to conform as nearly as practicable to similar services rendered to the personnel of the Army; and the facilities and personnel of the Army may be used for such services.

SEC. 11. If any member of the corps is physically injured or otherwise incapacitated in line of duty while on active duty, while engaged in authorized training without pay or while engaged in authorized travel with or without pay, or if any member dies as the result of such physical injury or other incapacity, she or her beneficiary shall be entitled to all the benefits prescribed by law for civilian employees of the United States who are physically injured while in the performance of duty or who die as a result thereof, and the United States Employees' Compensation Commission shall have jurisdiction in such cases and shall perform the same duties with reference thereto as in the cases of other civilian employees of the United States so injured or otherwise incapacitated: *Provided*, That the benefits shall accrue to any such member or her beneficiary whether the disability or death is the result of sickness or disease contracted in line of duty, while on active duty, when such sickness or disease is proximately caused by service on active duty: *Provided further*, That employees' compensation under this Act shall not be paid concurrently with active-duty pay or pension based upon active service: *And provided further*, That for the purpose of determining the benefits to which they are entitled under the provisions of this Act, members of the corps physically injured or otherwise incapacitated when engaged in authorized training without pay will be held and considered as receiving the pay and allowances they would have received if in a pay status.

The Secretary, under such regulations as he may prescribe, may authorize and require the hospitalization, medical and surgical treatment, and domiciliary care so long as any or all are necessary of members of the corps injured as hereinabove set out and the Secretary is authorized to incur obligations with respect thereto without reference to their line of duty status: *Provided*, That this shall not apply to members of the corps who are treated in private hospitals or by civilian physicians while on furloughs or leaves of absence in excess of twenty-four hours. Members of the corps who suffer injury or contract disease in line of duty while on active duty or while engaged in authorized training without pay shall, under such regulations as the Secretary may prescribe, be entitled at Government expense to such hospitalization, rehospitalization, medical and surgical care in hospital and at their homes as is necessary for the appropriate treatment of such injury or disease until discharged from service, released from active duty, or released from authorized training without pay and during such time the period of such hospitalization or rehospitalization, but not for more than an aggregate of six months after the termination of service if on active duty with pay, to the pay and allowances, whether in money or in kind, that they were entitled to receive at the time such injury was suffered or disease contracted and to the necessary transportation incident to such hospitalization, rehospitalization, and return to their homes when discharged from hospital and such pay and allowances shall be in lieu of monthly compensation payable under the first paragraph of this section, during the period covered thereby; and for any period of hospitalization or rehospitalization when they are not entitled to pay and allowances under the preceding provision they shall be entitled to subsistence at Government expense. In the event any member of the corps dies during her period of enlistment or appointment, the necessary expense for the recovery of the body, its preparation for burial, including the use of such of the uniform and articles of clothing issued to her as may be required, interment or cremation, and transportation of remains, including round-trip transportation and subsistence of an escort to her home or the place where she received orders or enrolled or was appointed, or to such other place as her relatives may designate provided the distance to such other place be not greater than the distance to her home, shall be paid by the United States: *Provided further*, That if the death of the member occurs as a result of an injury in line of duty while on active duty, while engaged in authorized training without pay, or while engaged in authorized travel with or without pay, and while such member is entitled to receive the benefits of the Act of September 7, 1916, the funeral and burial expenses shall be provided by the United States Employees' Compensation Commission under the provisions of section 11 of the Act of September 7, 1916, as amended (5 U. S. C. 761), and in addition to the authority contained in that section, the Commission may embalm and transport the body, in a hermetically sealed casket if necessary, to the home of the member.

Sec. 12. The corps shall not be a part of the Army, but it shall be the only women's organization authorized to serve with the Army, exclusive of the Army Nurse Corps. Nurses may be enrolled in the corps but nothing in this Act shall be construed to affect or change the Army Nurse Corps as now established by law.

Sec. 13. The corps shall be administered by the Secretary through the channels of command of the Army, pursuant to such regulations as the Secretary may promulgate. The Secretary is hereby authorized to prepare and issue any and all regulations, rules, or orders and to employ any and all of the facilities of the War Department and of the Army of the United States to carry into effect the provisions of this Act. The Secretary is further authorized to utilize the services of the United States Employment Service to determine the qualifications of applicants for admission into the corps.

Sec. 14. The members of the corps shall be subject to such disciplinary regulations as the Secretary may prescribe, including provisions for the punishment of major infractions by summary discharge from the corps, and shall be subject to the Articles of War pursuant to the second article thereof when applicable.

Sec. 15. Provisions for leave now applicable to the Army of the United States shall also apply to members of the corps. In the case of any person who has left or leaves a position in the employ of the United States, its Territories, or possessions, or the District of Columbia, to join the corps, such person shall, upon the termination of her period of service in the corps, be restored to such position or to a position of like seniority, status, and pay, such restoration to be without loss of seniority; she shall further be entitled to participate in all benefits pursuant to established rules and practices relating to employees on furlough or leave of absence.

Sec. 16. Promotion in all grades of officers who have established or may hereafter establish their qualifications for such promotion shall be made under such regulations as may be prescribed by the Secretary.

Sec. 17. Under such regulations as the Secretary of War may prescribe, members of the corps may be relieved from active duty and called or recalled thereto at any time during their period of service. While on an inactive duty status such members shall not be entitled to pay or allowances in lieu of quarters or subsistence and shall not by reason solely of their appointments, oaths, commissions, enlistments, or status as such members, or any duties or functions performed, be held or deemed to be officers or employees of the United States, or persons holding any office of trust or profit, or discharging any official function under or in connection with any department of the Government of the United States.

Sec. 18. The first sentence of section 125 of the National Defense Act, as amended, down to the first proviso thereof is further amended to read as follows:

"It shall be unlawful for any person not an officer or enlisted man of the United States Army, Navy, or Marine Corps to wear the duly prescribed uniform of the United States Army, Navy, or Marine Corps, or any distinctive part of such uniform or a uniform any part of which is similar to a distinctive part of the duly prescribed uniform of the United States Army, Navy, or Marine Corps; and it shall likewise be unlawful for any person not a member of the Women's Army Auxiliary Corps to wear its duly prescribed uniform or any distinctive part thereof, or a uniform any part of which is similar to a distinctive part thereof."

SEC. 19. Section 101 (1) of the Soldiers' and Sailors' Civil Relief Act of 1940 (Public, Numbered 861, Seventy-sixth Congress), is hereby amended to read as follows:

"The term 'persons in military service' and the term 'persons in the military service of the United States', as used in this Act shall include the following persons and no others. All members of the Army of the United States, the United States Navy, the Marine Corps, the Coast Guard, the Women's Army Auxiliary Corps, and all officers of the Public Health Service detailed by proper authority for duty either with the Army or the Navy. The term 'military service', as used in this Act, shall signify Federal service on active duty with any branch of service heretofore referred to or mentioned as well as training or education under the supervision of the United States preliminary to induction into the military service. The terms 'active service' or 'active duty' shall include the period during which a person in military service is absent from duty on account of sickness, wounds, leave, or other lawful cause."

SEC. 20. There is hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, such sums as may be necessary for the purpose of carrying out the provisions of this Act.

Approved, May 14, 1942.

77TH CONGRESS
2D SESSION

S. 2240

IN THE SENATE OF THE UNITED STATES

FEBRUARY 3 (legislative day, FEBRUARY 2), 1942

MR. HILL introduced the following bill; which was read twice and referred to the Committee on Military Affairs

FEBRUARY 9, 1942

Reported by MR. HILL, without amendment

APRIL 27 (legislative day, MARCH 30), 1942

Recommitted to the Committee on Military Affairs

A BILL

To establish a Women's Army Auxiliary Corps for service with the Army of the United States.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the President is hereby authorized to establish and organize in such units as he may from time to time determine to be necessary a Women's Army Auxiliary Corps for noncombatant service with the Army of the United States for the purpose of making available to the national defense when needed the knowledge, skill, and special training of the women of this Nation. The total number of women enrolled or appointed in the Women's Army Auxiliary Corps shall not exceed the number authorized from time to time by the President.

SEC. 2. From women citizens of the United States, the Secretary of War is authorized to appoint the Director and such Assistant Directors as he from time to time may deem necessary or advisable, all of such appointees to serve during the pleasure of the Secretary. The Director shall receive a salary of $3,000 per annum, together with such other allowances as may be provided for hereinafter. The Director, under the direction of the Chief of Staff of the Army of the United States, shall advise the War Department on matters pertaining to the establishment of the Women's Army Auxiliary Corps, shall operate and administer the corps in accordance with normal military procedure of command and administration and such regulations as may be prescribed by the Secretary of War; shall make recommendations as to plans and policies concerning the employment, training, supply, welfare, and discipline of the corps; and shall perform such other duties as may be prescribed by the Secretary. Each Assistant Director appointed pursuant to this Act shall receive a salary of $2,400 per annum, together with such other allowances as may be provided for hereinafter. Each Assistant Director shall perform such duties as may be prescribed by regulations published by the Secretary of War.

SEC. 3. The Secretary is authorized to establish and maintain such number of schools as he may consider necessary for the purpose of training candidates for officers of the corps. The Secretary may establish by regulation the qualifications for entry into such schools, the course of study to be pursued, and the requirements for graduation therefrom. Candidates for such schools may be selected from women volunteers who are citizens of the United States and during their attendance at such schools shall be furnished living quarters, uniforms as hereinafter provided, medical and dental service, medicines, medical and hospital supplies, hospitalization, subsistence, texts, necessary school supplies, and pay at the rate of $50 per month. The Secretary may appoint officers in such numbers as he may deem necessary for the proper administration of the corps in the grades of first officer, second officer, and third officer and with such responsibilities as he may direct. The pay of officers so appointed shall be $2,000 per annum for each first officer, $1,575 per annum for each second officer, and $1,500 per annum for each third officer, together with such allowances as may be hereinafter provided.

SEC. 4. The Director, each Assistant Director, and each officer of the corps shall receive allowances in lieu of rations at the rate of 60 cents per day and adequate quarters: *Provided,* That when adequate quarters are not furnished, the Director shall receive in lieu thereof the sum of $100 per month, an Assistant Director shall receive in lieu thereof the sum of $80 per month, and all other officers shall receive the sum of $40 per month. The adequacy of quarters furnished shall be conclusively determined in accordance with such regulations as may be issued by the Secretary.

SEC. 5. The Secretary is authorized to have enrolled in the corps, in addition to the Director, Assistant Directors, and officers hereinabove provided for, by voluntary enrollment, women of excellent character in good physical health, between the ages of twenty-one and forty-five years and citizens of the United States. The personnel of the corps so enrolled shall be distributed in the grades of first leader, leader, junior leader, and auxiliary, and those in the grade of auxiliary may be assigned ratings as specialist first, second, or third class, in accordance with regulations prescribed by the Secretary of War, who shall have complete authority to define the qualifications for all such leaders and specialists. The pay of first leaders shall be $864 per annum, of leaders $720 per annum, of junior leaders $648 per annum, and for auxiliaries not otherwise classified $21 per month for the first four months of service and $30 per month thereafter. Specialists of the first class shall be paid, in addition to their base pay, the sum of $15 per month, specialists of the second class shall similarly be paid $10 per month, and specialists of the third class shall similarly be paid $5 per month.

The Secretary shall provide quarters for the members of the corps so enrolled either on established Army posts, camps, or stations, or on those to be established, or in such other places as he may direct, and may use any of the facilities of the Army for such purpose: *Provided,* That when quarters are not available the Secretary may provide by regulation to pay allowances in lieu thereof to members other than the Director, the Assistant Directors, and the officers at the rate of $1.15 per day.

SEC. 6. The Secretary shall procure and furnish subsistence to all members of the corps, exclusive of the Director, Assistant Directors, and officers, which shall conform so far as is practicable to the subsistence of the Army: *Provided,* That when subsistence in kind is not furnished, the Secretary, by regulation, shall provide payment of allowances in lieu thereof.

SEC. 7. The Secretary shall prescribe the form of oath which shall be required of all the members of the corps and shall by regulation provide for the induction, including fingerprinting, of all members of the corps. The term of service for all members of the corps shall be one year: *Provided,* That the Secretary may discharge any member for cause, disability, or for the convenience of the Government: *And provided further,* That in time of war, or of national emergency declared by Congress or the President, the Secretary may, by order, extend the term of service to include the period of the war or national emergency plus not to exceed six months, and each contract of enrollment or certificate of appointment shall contain a statement to that effect.

Sec. 8. The Secretary shall prescribe uniforms, insignia, accessories, and equipment for the corps and shall procure and furnish to all members thereof, including the Director, Assistant Directors, and officers, such uniforms, headpieces, shoes, ornaments, insignia of rank and accessories, as well as such organization equipment and supplies, as may be required. The responsibility and accountability of the various individuals and officers for individual clothing and equipment, and for organization equipment and supplies, shall conform so far as is practicable, to the laws and regulations pertaining to the Army in like cases.

Sec. 9. The Secretary shall prescribe regulations for travel and for the payment of travel allowances, including travel allowances from the place of discharge to the place of acceptance for enrollment or appointment, and such regulations and allowances shall be similar to those for travel of the Army.

Sec. 10. The Secretary shall provide medical and dental services, hospitalization, medicines, and medical and hospital supplies for each member of the corps for injuries, sickness, and disease during the time such member is actually serving her enrollment or appointment, such services to conform as nearly as practicable to similar services rendered to the personnel of the Army; and the facilities and personnel of the Army may be used for such services.

SEC. 11. If any member of the corps is physically injured in line of duty while on active duty, while engaged in authorized training without pay, or while engaged in authorized travel with or without pay, or if any member dies as the result of such physical injury, she or her beneficiary shall be entitled to all the benefits prescribed by law for civilian employees of the United States who are physically injured while in the performance of duty or who die as a result thereof, and the United States Employees' Compensation Commission shall have jurisdiction in such cases and shall perform the same duties with reference thereto as in the cases of other civilian employees of the United States so injured: *Provided,* That the benefits shall accrue to any such member or her beneficiary whether the disability or death is the result of sickness or disease contracted in line of duty, while on active duty, when such sickness or disease is proximately caused by service on active duty: *Provided further,* That employees' compensation under this Act shall not be paid concurrently with active-duty pay or pension based upon active service: *And provided further,* That for the purpose of determining the benefits to which they are entitled under the provisions of this Act, members of the corps physically injured when engaged in authorized training without pay will be held and considered as receiving the pay and allowances they would have received if in a pay status.

The Secretary, under such regulations as he may prescribe, may authorize and require the hospitalization, medical and surgical treatment, and domiciliary care so long as any or all are necessary, of members of the corps injured as hereinabove set out and the Secretary is authorized to incur obligations with respect thereto without reference to their line of duty status: *Provided,* That this shall not apply to members of the corps who are treated in private hospitals or by civilian physicians while on furloughs or leaves of absence in excess of twenty-four hours. Members of the corps who suffer injury or contract disease in line of duty while on active duty or while engaged in authorized training without pay shall, under such regulations as the Secretary may prescribe, be entitled at Government expense to such hospitalization, rehospitalization, medical and surgical care in hospital and at their homes as is necessary for the appropriate treatment of such injury or disease until discharged from service, released from active duty, or released from authorized training without pay and during such time the period of such hospitalization or rehospitalization, but not for more than an aggregate of six months after the termination of service if on active duty with pay, to the pay and allowances, whether in money or in kind, that they were entitled to receive at the time such injury was suffered or disease contracted and to the necessary transportation incident to such hospitalization rehospitalization, and return to their homes when discharged from hospital and such pay and allowances shall be in lieu of monthly compensation payable under the first paragraph of this section, during the period covered thereby; and for any period of hospitalization or rehospitalization when they are not entitled to pay and allowances under the preceding provision they shall be entitled to subsistence at Government expense. In the event any member of the corps dies during her period of enlistment or appointment, the necessary expense for the recovery of the body, its preparation for burial, including the use of such of the uniform and articles of clothing issued to her as may be required, interment or cremation, and transportation of remains, including round-trip transportation and subsistence of an escort to her home or the place where she received orders or enrolled or was appointed, or to such other place as her relatives may designate provided the distance to such other place be not greater than the distance to her home, shall be paid by the United States: *Provided further*, That if the death of the member occurs as a result of an injury in line of duty while on active duty, while engaged in authorized training without pay, or while engaged in authorized travel with or without pay, and while such member is entitled to receive the benefits of the Act of September 7, 1916, the funeral and burial expenses shall be provided by the United States Employees' Compensation Commission under the provisions of section 11 of the Act of September 7, 1916, as amended (5 U. S. C. 761), and in addition to the authority contained in that section, the Commission may embalm and transport the body, in a hermetically sealed casket if necessary, to the home of the member.

SEC. 12. The corps shall not be a part of the Army, but it shall be the only women's organization authorized to serve with the Army, exclusive of the Army Nurse Corps. Nurses shall not be enrolled in the corps and nothing in this Act shall be construed to affect or change the Army Nurse Corps as now established by law.

SEC. 13. The corps shall be administered by the Secretary through the channels of command of the Army, pursuant to such regulations as the Secretary may promulgate. The Secretary is hereby authorized to prepare and issue any and all regulations, rules, or orders and to employ any and all of the facilities of the War Department and of the Army of the United States to carry into effect the provisions of this Act. The Secretary is further authorized to utilize the services of the United States Employment Service to determine the qualifications of applicants for admission into the corps.

SEC. 14. The members of the corps shall be subject to such disciplinary regulations as the Secretary may prescribe, including provisions for the punishment of major infractions by summary discharge from the corps, and shall be subject to the Articles of War pursuant to the second article thereof when applicable.

SEC. 15. Provisions for leave now applicable to the Army of the United States shall also apply to members of the corps. In the case of any person who has left or leaves a position in the employ of the United States, its Territories, or possessions, or the District of Columbia, to join the corps, such person shall, upon the termination of her period of service in the corps, be restored to such position or to a position of like seniority, status, and pay, such restoration to be without loss of seniority; she shall further be entitled to participate in all benefits pursuant to established rules and practices relating to employees on furlough or leave of absence.

SEC. 16. Promotion in all grades of officers who have established or may hereafter establish their qualifications for such promotion shall be made under such regulations as may be prescribed by the Secretary.

SEC. 17. Under such regulations as the Secretary of War may prescribe, members of the corps may be relieved from active duty and called or recalled thereto at any time during their period of service. While on an inactive duty status such members shall not be entitled to pay or allowances in lieu of quarters or subsistence and shall not by reason solely of their appointments, oaths, commissions, enlistments, or status as such members, or any duties or functions performed, be held or deemed to be officers or employees of the United States, or persons holding any office of trust or profit, or discharging any official function under or in connection with any department of the Government of the United States.

SEC. 18. The first sentence of section 125 of the National Defense Act, as amended, down to the first proviso thereof is further amended to read as follows:

"It shall be unlawful for any person not an officer or enlisted man of the United States Army, Navy, or Marine Corps to wear the duly prescribed uniform of the United States Army, Navy, or Marine Corps, or any distinctive part of such uniform or a uniform any part of which is similar to a distinctive part of the duly prescribed uniform of the United States Army, Navy, or Marine Corps; and it shall likewise be unlawful for any person not a member of the Women's Army Auxiliary Corps to wear its duly prescribed uniform or any distinctive part thereof, or a uniform any part of which is similar to a distinctive part thereof."

SEC. 19. Section 101 (1) of the Soldiers' and Sailors'

Civil Relief Act of 1940 (Public, Numbered 861, Seventy-sixth Congress), is hereby amended to read as follows:

"The term 'persons in military service' and the term 'persons in the military service of the United States', as used in this Act shall include the following persons and no others: All members of the Army of the United States, the United States Navy, the Marine Corps, the Coast Guard, the Women's Army Auxiliary Corps, and all officers of the Public Health Service detailed by proper authority for duty either with the Army or the Navy. The term 'military service', as used in this Act, shall signify Federal service on active duty with any branch of service heretofore referred to or mentioned as well as training or education under the supervision of the United States preliminary to induction into the military service. The terms 'active service' or 'active duty' shall include the period during which a person in military service is absent from duty on account of sickness, wounds, leave, or other lawful cause."

SEC. 20. There is hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, such sums as may be necessary for the purpose of carrying out the provisions of this Act.

77TH CONGRESS
1ST SESSION

H. R. 6293

IN THE HOUSE OF REPRESENTATIVES

DECEMBER 30, 1941

Mrs. ROGERS of Massachusetts introduced the following bill; which was referred to the Committee on Military Affairs

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A BILL

To establish a Women's Army Auxiliary Corps for service with the Army of the United States.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the President is hereby authorized to establish and organize in such units as he may from time to time determine to be necessary a Women's Army Auxiliary Corps for noncombatant service with the Army of the United States for the purpose of making available to the national defense when needed the knowledge, skill, and special training of the women of this Nation. The total number of women enrolled or appointed in the Women's Army Auxiliary Corps shall not exceed the number authorized from time to time by the President.

SEC. 2. From women citizens of the United States, the Secretary of War is authorized to appoint the Director and such Assistant Directors as he from time to time may deem necessary or advisable, all of such appointees to serve during the pleasure of the Secretary. The Director shall receive a salary of $3,000 per annum, together with such other allowances as may be provided for hereinafter. The Director, under the direction of the Chief of Staff of the Army of the United States, shall advise the War Department on matters pertaining to the establishment of the Women's Army Auxiliary Corps; shall operate and administer the corps in accordance with normal military procedure of command and administration and such regulations as may be prescribed by the Secretary of War; shall make recommendations as to plans and policies concerning the employment, training, supply, welfare, and discipline of the corps; and shall perform such other duties as may be prescribed by the Secretary. Each Assistant Director appointed pursuant to this Act shall receive a salary of $2,400 per annum, together with such other allowances as may be provided for hereinafter. Each Assistant Director shall perform such duties as may be prescribed by regulations published by the Secretary of War.

SEC. 3. The Secretary is authorized to establish and maintain such number of schools as he may consider necessary for the purpose of training candidates for officers of the corps. The Secretary may establish by regulation the qualifications for entry into such schools, the course of study to be pursued, and the requirements for graduation therefrom. Candidates for such schools may be selected from women volunteers who are citizens of the United States and during their attendance at such schools shall be furnished living quarters, uniforms as hereinafter provided, medical and dental service, medicines, medical and hospital supplies, hospitalization, subsistence, texts, necessary school supplies, and pay at the rate of $50 per month. The Secretary may appoint officers in such numbers as he may deem necessary for the proper administration of the corps in the grades of first officer, second officer, and third officer and with such responsibilities as he may direct. The pay of officers so appointed shall be $2,000 per annum for each first officer, $1,575 per annum for each second officer, and $1,500 per annum for each third officer, together with such allowances as may be hereinafter provided.

SEC. 4. The Director, each Assistant Director, and each officer of the corps shall receive allowances in lieu of rations at the rate of 60 cents per day and adequate quarters: *Provided*, That when adequate quarters are not furnished, the Director shall receive in lieu thereof the sum of $100 per month, an Assistant Director shall receive in lieu thereof the sum of $80 per month, and all other officers shall receive the sum of $40 per month. The adequacy of quarters furnished shall be conclusively determined in accordance with such regulations as may be issued by the Secretary.

Sec. 5. The Secretary is authorized to have enrolled in the corps, in addition to the Director, Assistant Directors, and officers hereinabove provided for, by voluntary enrollment, women of excellent character in good physical health, between the ages of twenty-one and forty-five years and citizens of the United States. The personnel of the corps so enrolled shall be distributed in the grades of first leader, leader, junior leader, and auxiliary, and those in the grade of auxiliary may be assigned ratings as specialist first, second, or third class, in accordance with regulations prescribed by the Secretary of War, who shall have complete authority to define the qualifications for all such leaders and specialists. The pay of first leaders shall be $864 per annum, of leaders $720 per annum, of junior leaders $648 per annum, and for auxiliaries not otherwise classified $21 per month for the first four months of service and $30 per month thereafter. Specialists of the first class shall be paid, in addition to their base pay, the sum of $15 per month, specialists of the second class shall similarly be paid $10 per month, and specialists of the third class shall similarly be paid $5 per month.

The Secretary shall provide quarters for the members of the corps so enrolled either on established Army posts, camps, or stations, or on those to be established, or in such other places as he may direct, and may use any of the facilities of the Army for such purpose: *Provided,* That when quarters are not available the Secretary may provide by regulation to pay allowances in lieu thereof to members other than the Director, the Assistant Directors, and the officers at the rate of $1.15 per day.

SEC. 6. The Secretary shall procure and furnish subsistence to all members of the corps, exclusive of the Director, Assistant Directors, and officers, which shall conform so far as is practicable to the subsistence of the Army: *Provided,* That when subsistence in kind is not furnished, the Secretary, by regulation, shall provide payment of allowances in lieu thereof.

SEC. 7. The Secretary shall prescribe the form of oath which shall be required of all the members of the corps and shall by regulation provide for the induction, including fingerprinting, of all members of the corps. The term of service for all members of the corps shall be one year: *Provided,* That the Secretary may discharge any member for cause, disability, or for the convenience of the Government: *And provided further,* That in time of war, or of national emergency declared by Congress or the President, the Secretary may, by order, extend the term of service to include the period of the war or national emergency plus not to exceed six months, and each contract of enrollment or certificate of appointment shall contain a statement to that effect.

SEC. 8. The Secretary shall prescribe uniforms, insignia, accessories, and equipment for the corps and shall procure and furnish to all members thereof, including the Director, Assistant Directors, and officers, such uniforms, headpieces, shoes, ornaments, insignia of rank and accessories, as well as such organization equipment and supplies, as may be required. The responsibility and accountability of the various individuals and officers for individual clothing and equipment, and for organization equipment and supplies, shall conform so far as is practicable, to the laws and regulations pertaining to the Army in like cases.

SEC. 9. The Secretary shall prescribe regulations for travel and for the payment of travel allowances, including travel allowances from the place of discharge to the place of acceptance for enrollment or appointment, and such regulations and allowances shall be similar to those for travel of the Army.

SEC. 10. The Secretary shall provide medical and dental services, hospitalization, medicines, and medical and hospital supplies for each member of the corps for injuries, sickness, and disease during the time such member is actually serving her enrollment or appointment, such services to conform as nearly as practicable to similar services rendered to the personnel of the Army; and the facilities and personnel of the Army may be used for such services.

SEC. 11. If any member of the corps is physically injured in line of duty while on active duty, while engaged in authorized training without pay or while engaged in authorized travel with or without pay, or if any member dies as the result of such physical injury, she or her beneficiary shall be entitled to all the benefits prescribed by law for civilian employees of the United States who are physically injured while in the performance of duty or who die as a result thereof, and the United States Employees' Compensation Commission shall have jurisdiction in such cases and shall perform the same duties with reference thereto as in the cases of other civilian employees of the United States so injured: *Provided,* That the benefits shall accrue to any such member or her beneficiary whether the disability or death is the result of sickness or disease contracted in line of duty, while on active duty, when such sickness or disease is proximately caused by service on active duty: *Provided further,* That employees' compensation under this Act shall not be paid concurrently with active-duty pay or pension based upon active service: *And provided further,* That for the purpose of determining the benefits to which they are entitled under the provisions of this Act, members of the corps physically injured when engaged in authorized training without pay will be held and considered as receiving the pay and allowances they would have received if in a pay status.

The Secretary, under such regulations as he may prescribe, may authorize and require the hospitalization, medical and surgical treatment, and domiciliary care so long as any or all are necessary of members of the corps injured as hereinabove set out and the Secretary is authorized to incur obligations with respect thereto without reference to their line of duty status: *Provided,* That this shall not apply to members of the corps who are treated in private hospitals or by civilian physicians while on furloughs or leaves of absence in excess of twenty-four hours. Members of the corps who suffer injury or contract disease in line of duty while on active duty or while engaged in authorized training without pay shall, under such regulations as the Secretary may prescribe, be entitled at Government expense to such hospitalization, rehospitalization, medical and surgical care in hospital and at their homes as is necessary for the appropriate treatment of such injury or disease until discharged from service, released from active duty, or released from authorized training without pay and during such time the period of such hospitalization or rehospitalization, but not for more than an aggregate of six months after the termination of service if on active duty with pay, to the pay and allowances, whether in money or in kind, that they were entitled to receive at the time such injury was suffered or disease contracted and to the necessary transportation incident to such hospitalization, rehospitalization, and return to their homes when discharged from hospital and such pay and allowances shall be in lieu of monthly compensation payable under the first paragraph of this section, during the period covered thereby; and for any period of hospitalization or rehospitalization when they are not entitled to pay and allowances under the preceding provision they shall be entitled to subsistence at Government expense. In the event any member of the corps dies during her period of enlistment or appointment, the necessary expense for the recovery of the body, its preparation for burial, including the use of such of the uniform and articles of clothing issued to her as may be required, interment or cremation, and transportation of remains, including round-trip transportation and subsistence of an escort to her home or the place where she received orders or enrolled or was appointed, or to such other place as her relatives may designate provided the distance to such other place be not greater than the distance to her home, shall be paid by the United States: *Provided further*, That if the death of the member occurs as a result of an injury in line of duty while on active duty, while engaged in authorized training without pay, or while engaged in authorized travel with or without pay, and while such member is entitled to receive the benefits of the Act of September 7, 1916, the funeral and burial expenses shall be provided by the United States Employees' Compensation Commission under the provisions of section 11 of the Act of September 7, 1916, as amended (5 U. S. C. 761), and in addition to the authority contained in that section, the Commission may embalm and transport the body, in a hermetically sealed casket if necessary, to the home of the member.

SEC. 12. The corps shall not be a part of the Army, but it shall be the only women's organization authorized to serve with the Army, exclusive of the Army Nurse Corps. Nurses shall not be enrolled in the corps and nothing in this Act shall be construed to affect or change the Army Nurse Corps as now established by law.

SEC. 13. The corps shall be administered by the Secretary through the channels of command of the Army, pursuant to such regulations as the Secretary may promulgate. The Secretary is hereby authorized to prepare and issue any and all regulations, rules, or orders and to employ any and all of the facilities of the War Department and of the Army of the United States to carry into effect the provisions of this Act. The Secretary is further authorized to utilize the services of the United States Employment Service to determine the qualifications of applicants for admission into the corps.

SEC. 14. The members of the corps shall be subject to such disciplinary regulations as the Secretary may prescribe, including provisions for the punishment of major infractions by summary discharge from the corps, and shall be subject to the Articles of War pursuant to the second article thereof when applicable.

SEC. 15. Provisions for leave now applicable to the Army of the United States shall also apply to members of the corps. In the case of any person who has left or leaves a position in the employ of the United States, its Territories, or possessions, or the District of Columbia, to join the corps, such person shall, upon the termination of her period of service in the corps, he restored to such position or to a position of like seniority, status, and pay, such restoration to be without loss of seniority; she shall further be entitled to participate in all benefits pursuant to established rules and practices relating to employees on furlough or leave of absence.

SEC. 16. Promotion in all grades of officers who have established or may hereafter establish their qualifications for such promotion shall be made under such regulations as may be prescribed by the Secretary.

SEC. 17. Under such regulations as the Secretary of War may prescribe, members of the corps may be relieved from active duty and called or recalled thereto at any time during their period of service. While on an inactive duty status such members shall not be entitled to pay or allowances in lieu of quarters or subsistence and shall not by reason solely of their appointments, oaths, commissions, enlistments, or status as such members, or any duties or functions performed, be held or deemed to be officers or employees of the United States, or persons holding any office of trust or profit, or discharging any official function under or in connection with any department of the Government of the United States.

SEC. 18. The first sentence of section 125 of the National Defense Act, as amended, down to the first proviso thereof is further amended to read as follows:

"It shall be unlawful for any person not an officer or enlisted man of the United States Army, Navy, or Marine Corps to wear the duly prescribed uniform of the United States Army, Navy, or Marine Corps, or any distinctive part of such uniform or a uniform any part of which is similar to a distinctive part of the duly prescribed uniform of the United States Army, Navy, or Marine Corps; and it shall likewise be unlawul for any person not a member of the Women's Army Auxiliary Corps to wear its duly prescribed uniform or any distinctive part thereof, or a uniform any part of which is similar to a distinctive part thereof."

SEC. 19. Section 101 (1) of the Soldiers' and Sailors'

Civil Relief Act of 1940 (Public, Numbered 861, Seventy-sixth Congress), is hereby amended to read as follows:

"The term 'persons in military service' and the term 'persons in the military service of the United States', as used in this Act shall include the following persons and no others. All members of the Army of the United States, the United States Navy, the Marine Corps, the Coast Guard, the Women's Army Auxiliary Corps, and all officers of the Public Health Service detailed by proper authority for duty either with the Army or the Navy. The term 'military service', as used in this Act, shall signify Federal service on active duty with any branch of service heretofore referred to or mentioned as well as training or education under the supervision of the United States preliminary to induction into the military service. The terms 'active service' or 'active duty' shall include the period during which a person in military service is absent from duty on account of sickness, wounds, leave, or other lawful cause."

SEC. 20. There is hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, such sums as may be necessary for the purpose of carrying out the provisions of this Act.

Union Calendar No. 880

77TH CONGRESS
2D SESSION

H. R. 7539

[Report No. 2475]

IN THE HOUSE OF REPRESENTATIVES

SEPTEMBER 10, 1942

Mr. MAY introduced the following bill; which was referred to the Committee on Military Affairs

SEPTEMBER 21, 1942

Reported with amendments, committed to the Committee of the Whole House on the state of the Union, and ordered to be printed

[Omit the part struck through and insert the part printed in italic]

A BILL

To amend the Act entitled "An Act to establish a Women's Army Auxiliary Corps for service with the Army of the United States", approved May 14, 1942, to create the grade of field director in such corps, to provide for enrolled grades in such corps comparable to the enlisted grades in the Regular Army, to provide pay and allowances for all members of such corps at the same rates as those payable to members of the Regular Army in corresponding grades, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That sections 2, 3, 4, 5, and 6 of the Act entitled "An Act to establish a Women's Army Auxiliary Corps for service with the Army of the United States", approved May 14, 1942 (Public Law 554, Seventy-seventh Congress), are hereby amended to read as follows:

"SEC. 2. From women citizens of the United States, the Secretary of War is authorized to appoint the director and such assistant directors and field directors as he, from time to time, may deem necessary and advisable, all of such appointees to serve during the pleasure of the Secretary. The director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the ~~sixth~~ *fourth* pay period. The director, under the direction of the Chief of Staff of the Army of the United States, shall advise the War Department on matters pertaining to the establishment of the Women's Army Auxiliary Corps; shall operate and administer the corps in accordance with normal military procedure of command and administration and such regulations as may be prescribed by the Secretary of War; shall make recommendations as to plans and policies concerning the employment, training, supply, welfare, and discipline of the corps; and shall perform such other duties as may be prescribed by the Secretary. Each assistant director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the ~~fifth~~ *third* pay period; and each field director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the ~~fourth~~ *second* pay period. Each assistant director and field director shall perform such duties as may be prescribed by regulations published by the Secretary of War.

"SEC. 3. The Secretary is authorized to establish and maintain such number of schools as he may consider necessary for the purpose of training candidates for officers of the corps. The Secretary may establish by regulations the qualifications for entry into such schools, the course of study to be pursued, and the requirements for graduation therefrom. Candidates for such schools may be selected from enrolled members of the Women's Army Auxiliary Corps or from women volunteers who are citizens of the United States. Transportation in kind and subsistence may be authorized by the Secretary for such candidates from the place from which authorized to proceed to such schools, and return, or, in lieu of furnishing such transportation in kind and subsistence, to pay them travel allowances at the rate of 5 cents per mile and subsistence allowances at the rate of 1 cent per mile for the distance of such journeys by the shortest usually traveled routes. Payment of such allowances for return journeys may be made in advance of the actual performance thereof. Dur-

ing the attendance of such candidates at such schools, they shall be furnished living quarters, uniforms as hereinafter provided, medical and dental service, medicines, medical and hospital supplies, hospitalization, subsistence, textbooks, necessary school supplies, and pay. All enrolled members of the corps shall receive the pay and allowances of their grade as hereinafter provided, and all other candidates shall receive pay at the rate of $50 per month. The Secretary may appoint officers in such number as he may deem necessary for the proper administration of the corps in the grades of first officer, second officer, and third officer, and with such responsibilities as he may direct. First officers, second officers, and third officers shall receive pay and allowances at the rate now or hereafter provided by law for commissioned officers of the Regular Army, without dependents, who are entitled to receive the pay of the third, second, and first pay periods, respectively.

"SEC. 4. The Secretary is authorized to have enrolled in the corps, in addition to the director, assistant director, field directors, and officers hereinabove provided for, by voluntary enrollment, women of excellent character in good physical health, between the ages of twenty-one and forty-five years and citizens of the United States. The personnel of the corps so enrolled shall be distributed, in accordance with regulations prescribed by the Secretary of War, in seven grades corresponding to the seven enlisted grades in the Regular Army; and the Secretary shall have complete authority to define the qualifications for all of the grades in which such personnel are so distributed. Personnel in each of the seven grades shall receive pay and allowances at the rates now or hereafter provided by law for enlisted men, without dependents, in the corresponding enlisted grades in the Regular Army.

"SEC. 5. The Secretary shall, so far as practicable, provide quarters for the members of the corps so enrolled either on established Army posts, camps, or stations, or on those to be established, or in such other places as he may direct, and may use any of the facilities of the Army for such purposes.

"SEC. 6. The Secretary shall procure and furnish subsistence to all members of the corps, exclusive of the director, assistant directors, field directors, and officers, which shall conform so far as is practicable to the subsistence of the Army: *Provided*, That when subsistence in kind is not furnished, the Secretary, by regulation, shall provide for payment of allowances in lieu thereof."

SEC. 2. Section 8 of such Act of May 14, 1942, is amended by inserting therein after the words "assistant directors" a comma and the following: "field directors".

SEC. 3. The Secretary of War is authorized to permit members of the Women's Army Auxiliary Corps to make allotments from their pay, under such regulations as he may prescribe, for purposes which in his discretion warrant such action.

77TH CONGRESS
2D SESSION

S. 2751

IN THE SENATE OF THE UNITED STATES

SEPTEMBER 7, 1942

Mr. REYNOLDS introduced the following bill; which was read twice and referred to the Committee on Military Affairs

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A BILL

To amend the Act entitled "An Act to establish a Women's Army Auxiliary Corps for service with the Army of the United States", approved May 14, 1942, to create the grade of field director in such corps, to provide for enrolled grades in such corps comparable to the enlisted grades in the Regular Army, to provide pay and allowances for all members of such corps at the same rates as those payable to members of the Regular Army in corresponding grades, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That sections 2, 3, 4, 5, and 6 of the Act entitled "An Act to establish a Women's Army Auxiliary Corps for service with the Army of the United States", approved

[illegible]
War Dept

May 14, 1942 (Public Law 554, Seventy-seventh Congress), are hereby amended to read as follows:

"Sec. 2. From women citizens of the United States, the Secretary of War is authorized to appoint the Director and such Assistant Directors and field directors as he from time to time may deem necessary and advisable, all of such appointees to serve during the pleasure of the Secretary. The Director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the sixth pay period. The Director, under the direction of the Chief of Staff of the Army of the United States, shall advise the War Department on matters pertaining to the establishment of the Women's Army Auxiliary Corps; shall operate and administer the corps in accordance with normal military procedure of command and administration and such regulations as may be prescribed by the Secretary of War; shall make recommendations as to plans and policies concerning the employment, training, supply, welfare, and discipline of the corps; and shall perform such other duties as may be prescribed by the Secretary. Each Assistant Director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the fifth pay period;

and each field director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the fourth pay period. Each Assistant Director and field director shall perform such duties as may be prescribed by regulations published by the Secretary of War.

"SEC. 3. The Secretary is authorized to establish and maintain such number of schools as he may consider necessary for the purpose of training candidates for officers of the corps. The Secretary may establish by regulations the qualifications for entry into such schools, the course of study to be pursued, and the requirements for graduation therefrom. Candidates for such schools may be selected from enrolled members of the Women's Army Auxiliary Corps or from women volunteers who are citizens of the United States. Transportation in kind and subsistence may be authorized by the Secretary for such candidates from the place from which authorized to proceed to such schools, and return, or, in lieu of furnishing such transportation in kind and subsistence, to pay them travel allowances at the rate of 5 cents per mile and subsistence allowances at the rate of 1 cent per mile for the distance of such journeys by the shortest usually traveled routes. Payment of such allowances for return journeys may be made in advance of the actual performance thereof. Dur-

ing the attendance of such candidates at such schools, they shall be furnished living quarters, uniforms as hereinafter provided, medical and dental service, medicines, medical and hospital supplies, hospitalization, subsistence, textbooks, necessary school supplies, and pay. All enrolled members of the corps shall receive the pay and allowances of their grade as hereinafter provided, and all other candidates shall receive pay at the rate of $50 per month. The Secretary may appoint officers in such number as he may deem necessary for the proper administration of the corps in the grades of first officer, second officer, and third officer, and with such responsibilities as he may direct. First officers, second officers, and third officers shall receive pay and allowances at the rate now or hereafter provided by law for commissioned officers of the Regular Army, without dependents, who are entitled to receive the pay of the third, second, and first pay periods, respectively.

"SEC. 4. The Secretary is authorized to have enrolled in the corps, in addition to the Director, Assistant Director, field directors, and officers hereinabove provided for, by voluntary enrollment, women of excellent character in good physical health, between the ages of twenty-one and forty-five years and citizens of the United States. The personnel of the corps so enrolled shall be distributed, in accordance with regulations prescribed by the Secretary of War, in seven

grades corresponding to the seven enlisted grades in the Regular Army; and the Secretary shall have complete authority to define the qualifications for all of the grades in which such personnel are so distributed. Personnel in each of the seven grades shall receive pay and allowances at the rates now or hereafter provided by law for enlisted men, without dependents, in the corresponding enlisted grades in the Regular Army.

"SEC. 5. The Secretary shall, so far as practicable, provide quarters for the members of the corps so enrolled either on established Army posts, camps, or stations, or on those to be established, or in such other places as he may direct, and may use any of the facilities of the Army for such purposes.

"SEC. 6. The Secretary shall procure and furnish subsistence to all members of the corps, exclusive of the Director, Assistant Directors, field directors, and officers, which shall conform so far as is practicable to the subsistence of the Army: *Provided*, That when subsistence in kind is not furnished, the Secretary, by regulation, shall provide for payment of allowances in lieu thereof."

SEC. 2. Section 8 of such Act of May 14, 1942, is amended by inserting therein after the words "Assistant Directors" a comma and the following: "field directors".

SEC. 3. The Secretary of War is authorized to permit members of the Women's Army Auxiliary Corps to make

allotments from their pay, under such regulations as he may prescribe, for purposes which in his discretion warrant such action.

77TH CONGRESS
2D SESSION

S. 2751

IN THE SENATE OF THE UNITED STATES

SEPTEMBER 7, 1942

Mr. REYNOLDS introduced the following bill; which was read twice and referred to the Committee on Military Affairs

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A BILL

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Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That sections 2, 3, 4, 5, and 6 of the Act entitled "An Act to establish a Women's Army Auxiliary Corps for service with the Army of the United States", approved

May 14, 1942 (Public Law 554, Seventy-seventh Congress), are hereby amended to read as follows:

"SEC. 2. From women citizens of the United States, the Secretary of War is authorized to appoint the Director and such Assistant Directors and field directors as he from time to time may deem necessary and advisable, all of such appointees to serve during the pleasure of the Secretary. The Director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the sixth pay period. The Director, under the direction of the Chief of Staff of the Army of the United States, shall advise the War Department on matters pertaining to the establishment of the Women's Army Auxiliary Corps; shall operate and administer the corps in accordance with normal military procedure of command and administration and such regulations as may be prescribed by the Secretary of War; shall make recommendations as to plans and policies concerning the employment, training, supply, welfare, and discipline of the corps; and shall perform such other duties as may be prescribed by the Secretary. Each Assistant Director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the fifth pay period;

and each field director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the fourth pay period. Each Assistant Director and field director shall perform such duties as may be prescribed by regulations published by the Secretary of War.

"SEC. 3. The Secretary is authorized to establish and maintain such number of schools as he may consider necessary for the purpose of training candidates for officers of the corps. The Secretary may establish by regulations the qualifications for entry into such schools, the course of study to be pursued, and the requirements for graduation therefrom. Candidates for such schools may be selected from enrolled members of the Women's Army Auxiliary Corps or from women volunteers who are citizens of the United States. Transportation in kind and subsistence may be authorized by the Secretary for such candidates from the place from which authorized to proceed to such schools, and return, or, in lieu of furnishing such transportation in kind and subsistence, to pay them travel allowances at the rate of 5 cents per mile and subsistence allowances at the rate of 1 cent per mile for the distance of such journeys by the shortest usually traveled routes. Payment of such allowances for return journeys may be made in advance of the actual performance thereof. Dur-

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"SEC. 6. The Secretary shall procure and furnish subsistence to all members of the corps, exclusive of the Director, Assistant Directors, field directors, and officers, which shall conform so far as is practicable to the subsistence of the Army: *Provided*, That when subsistence in kind is not furnished, the Secretary, by regulation, shall provide for payment of allowances in lieu thereof."

SEC. 2. Section 8 of such Act of May 14, 1942, is amended by inserting therein after the words "Assistant Directors" a comma and the following: "field directors".

SEC. 3. The Secretary of War is authorized to permit members of the Women's Army Auxiliary Corps to make

allotments from their pay, under such regulations as he may prescribe, for purposes which in his discretion warrant such action.

Women's Bur Labor Dept

77TH CONGRESS } HOUSE OF REPRESENTATIVES { REPORT
2d Session } { No. 2475

WOMEN'S ARMY AUXILIARY CORPS ACT AMENDMENTS

SEPTEMBER 21, 1942.—Committed to the Committee of the Whole House on the state of the Union and ordered to be printed

Mr. MAY, from the Committee on Military Affairs, submitted the following

REPORT

[To accompany H. R. 7539]

The Committee on Military Affairs, to whom was referred the bill (H. R. 7539) to amend the act entitled "An act to establish a Women's Army Auxiliary Corps for service with the Army of the United States," having considered the same, submit the following report thereon with the recommendation that it do pass, with the following amendments:

In line 11, page 2, of the bill, strike out the word "sixth" and insert in lieu thereof the word "fourth".

In line 25, page 2 of the bill, strike out the word "fifth" and insert in lieu thereof the word "third".

In line 4, page 3 of the bill, strike out the word "fourth" and insert in lieu thereof the word "second".

The proposed legislation contemplates three major and two minor changes in the organization and pay of the Women's Army Auxiliary Corps as established by the act approved May 14, 1942, entitled "An act to establish a Women's Army Auxiliary Corps for service with the Army of the United States."

The act of May 14, 1942, provided only for four enlisted or enrolled grades in the Women's Army Auxiliary Corps. Those grades, designated as first leader, leader, junior leader, and auxiliary, correspond to the grades of sergeant, corporal, private first class, and private of the Army of the United States. No provision was made for grades corresponding to the first three grades of enlisted men in the Army. It has been found, however, that members of the Women's Army Auxiliary Corps can be used effectively to replace enlisted men of these grades in technical positions, particularly in the Antiaircraft Warning Service. The Secretary of War proposed, therefore, and your committee believe, that the three higher enlisted grades should be provided in the corps, in order that the women performing the duties of such grades may receive adequate recognition comparable to that of the men whom they replace. This constitutes the first major change proposed in the present Women's Army Auxiliary Corps.

The second major amendment creates a new commissioned grade, that of field director in the corps. The act of May 14, 1942, provides a limit of 150,000 to the strength of the corps. On April 1, 1942, the President, by Executive order, authorized an initial strength of 25,000. The development of the corps, together with the discovery of many new positions wherein the services of members of the Women's Army Auxiliary Corps may be utilized to replace men in the Army of the United States, indicates that it may soon be necessary and advisable to ask the President to increase the initial strength. This increase in the size and complexity of the corps makes it advisable to provide the Director with further assistants in the supervision and administration of companies or groups of companies of the corps stationed throughout the United States and overseas. The new grade of field director will permit the appropriate assignment of officers of the corps to such supervisory duties. Your committee concur in the view of the War Department that this grade is essential to the proper organization and efficient functioning of the corps.

The third major change contemplated by the proposed legislation is the revision of the present pay of the members of the Women's Army Auxiliary Corps. Subsequent to the establishment of the corps, the Congress passed the Pay Readjustment Act of 1942. This act substantially increased the pay and allowances of enlisted men of the Army and Navy. The proposed legislation provides new rates of pay for members of the Women's Army Auxiliary Corps corresponding to those provided for enlisted men and junior officers of the Army in similar grades established by the Pay Readjustment Act of 1942. Your committee are of the opinion that such rates of pay are justified in view of the fact that the women concerned will replace soldiers and junior officers of the Army, and will perform the same duties for which such men and officers now receive the higher pay rates. Your committee also have taken cognizance of the fact that the act of July 30, 1942 (Public Law 689, 77th Cong.), creating the Women's Reserve in the Navy, and which passed subsequent to the Pay Readjustment Act of 1942, provides such higher rates for member of the Naval Women's Corps. It is not believed that there is any just ground to support such discrimination.

The War Department recommended that the pay and allowances of the Director of the Women's Army Auxiliary Corps be raised from the fourth to the sixth pay period; that the pay and allowances of Assistant Directors be raised from the third to the fifth pay period; and that the pay and allowances of field directors be established at the rates provided for the third pay period of officers of the Army as established by the Pay Readjustment Act of 1942. Your committee gave this proposal careful consideration. It does not believe, however, that the duties and responsibilities of these officers of the Women's Army Auxiliary Corps are presently such as would justify such an increase in pay and allowances. Furthermore, it should be noted that no such rates are provided for senior officers of the Women's Reserve of the Navy. Consequently, your committee recommend the amendment of the bill, as indicated above, which amendments would continue the present rates of pay of the Director and Assistant

Directors of the Women's Army Auxiliary Corps, and would establish the pay of field directors at one period below that of the Assistant Director.

The first of the minor changes in the present Women's Army Auxiliary Corps Act corrects an omission in that act. No provision was made therein whereby the Government could pay the transportation expenses of officer candidates, not members of the corps, to and from officer training schools of the corps. Your committee is of the opinion that the payment of such transportation expenses is a proper charge against the Government, and approves of the provision in the proposed legislation authorizing the payment of the same.

At the time the Women's Army Auxiliary Corps Act was under consideration, it was contemplated that members of the corps could make voluntary allotments of their pay for proper purposes in the same manner as officers and enlisted men of the Army are now permitted to do by law. No specific provision therefor was provided in that act. Subsequent to the passage of the act, however, the Comptroller General has determined that there is no legal authority whereby members of the corps may make such voluntary allotments. A provision, therefore, has been included in the proposed legislation to permit such allotments. This constitutes the second minor modification of the act.

There follows a letter from the Secretary of War recommending the passage of the proposed legislation, and explaining it in detail:

SEPTEMBER 3, 1942.

Hon. ANDREW J. MAY,
Chairman, Committee on Military Affairs,
House of Representatives.

DEAR MR. MAY: The War Department favors the enactment of legislation to accomplish the purpose of H. R. 7448, a bill "to amend the act entitled 'An act to establish a Women's Army Auxiliary Corps for service with the Army of the United States,' approved May 14, 1942, to provide that the base pay of auxiliaries, officers, and leaders in the Women's Army Auxiliary Corps shall be the same as the base pay of the corresponding grades in the Army, and for other purposes." However, this problem has been the subject of considerable study recently in the Department, with the result that a slightly different approach to the pay situation has been evolved, and certain additional matters have been given consideration.

H. R. 7448 would increase the pay of first leaders, leaders, junior leaders, and unclassified auxiliaries of the Corps to correspond respectively to the pay of enlisted men of the third, fourth, fifth, and seventh grades in the Army. The pay of first, second, and third officers would be increased respectively to $2,000, $1,875, and $1,800 per annum.

The War Department proposes to provide for an additional officers' grade to be known as field director, and for enrolled grades comparable to the enlisted grades in the Regular Army; to provide pay and allowances for all officers and enrolled grades at the same rates as are paid to comparable grades in the Regular Army, without dependents; to provide for transportation for officer candidates to officers' school and return; and to authorize the Secretary of War to permit members of the corps to make allotments of pay.

Public Law 554 provided a pay scale for the various grades in the Women's Army Auxiliary Corps generally in accord with the then existing pay scale of the Regular Army in comparable grades. Since the enactment of Public Law 554 the pay scale for the Army has been changed. Therefore, in order to carry out the original intention of the Congress of keeping the rates of pay and allowances of the Women's Army Auxiliary Corps in line with those provided for the Army in comparable grades, without dependents, the proposed amendments should be enacted into law.

The proposed amendments would create six grades of officers in the corps in place of five grades provided for in Public Law 554. The Director of the corps would receive the same pay and allowances as are now authorized by law for a colonel of the Regular Army, without dependents. The Assistant Directors would receive the same pay and allowances as a lieutenant colonel without dependents. The new grade provided, that of field director, would receive the same pay and allowances as a major without dependents. The first, second, and third officers would receive the same pay and allowances as are authorized, without dependents, for a captain, first lieutenant, and second lieutenant of the Regular Army, respectively. The Director and Assistant Directors would be essentially staff officers and have supervision over the administration and training of other members of the corps, including supervision of the officers' school. The field directors would supervise groups of companies in the field, and the company officers composed of the first, second, and third officer groups would be in command of the companies and furnish personnel for specialists, such as medical doctors and dentists.

The proposed legislation also changes the enrolled grades provided for in Public Law 554. The present law provides for four grades, first leader, leader, junior leader, and auxiliary; and it also provides for three grades of specialists' ratings. The Army has now done away with specialists' ratings, and it is believed that the organization of the Women's Army Auxiliary Corps should be brought into line with the organization of the Army. Thus the proposed amendments provide for the distribution of enrolled personnel in seven grades comparable in duties and in pay to the seven enlisted grades authorized for the Army.

This adjustment of enrolled grades is necessary and advisable in the opinion of the War Department since the organization of Women's Army Auxiliary Corps companies will correspond more nearly to that of headquarters companies rather than line companies and such an organization requires seven grades for the same reason that headquarters companies of regiments in the Regular Army need them.

The amendment to section 3 providing for transportation to and from the officers' school for all candidates is designed to clarify the authority of the Secretary of War to provide transportation for all candidates to school and return, whether or not they were enrolled members of the corps. It is contemplated initially that certain persons who are deemed to be worthy officer material will be selected for the school who are not enrolled members of the corps.

On August 6, 1942, the Comptroller General ruled that the act of May 16, 1938 (52 Stat. 354), which authorizes military personnel to make voluntary allotments of their pay, could not be construed to apply to members of the Women's Army Auxiliary Corps. The War Department believes that it is desirable to have this authority for members of the corps, and section 3 of the proposed amendment contains this authorization. This will involve no additional expense to the Government other than administrative expense.

It is estimated that the proposed legislation will increase the cost of operation of the Women's Army Auxiliary Corps approximately $6,000,000 for the fiscal year 1943.

The War Department recommends that the enclosed draft of a bill be substituted for H. R. 7448.

The Bureau of the Budget advises that there is no objection to the submission of this report.

Sincerely yours,

HENRY L. STIMSON,
Secretary of War.

The draft of bill proposed by the Secretary of War was introduced by the chairman of the committee and is the bill now reported upon.

Pursuant to the provisions of rule XIII, of the Rules of the House of Representatives, there follows in parallel columns the provisions of existing law and the proposed amendments thereto:

EXISTING LAW	PROPOSED LEGISLATION
[Public Law 554—77th Congress]	
Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the President is hereby authorized to establish and organize in such units as he may from time to time determine to be	*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That sections 2, 3, 4, 5, and 6 of the Act entitled "An Act to establish a Women's Army Auxiliary Corps for service with

EXISTING LAW	PROPOSED LEGISLATION
necessary a Women's Army Auxiliary Corps for noncombatant service with the Army of the United States for the purpose of making available to the national defense when needed the knowledge, skill, and special training of the women of this Nation. The total number of women enrolled or appointed in the Women's Army Auxiliary Corps shall not exceed the number authorized from time to time by the President, and in no event shall exceed one hundred fifty thousand.	the Army of the United States", approved May 14, 1942 (Public Law 554, Seventy-seventh Congress), are hereby amended to read as follows:
SEC. 2. From women citizens of the United States, the Secretary of War is authorized to appoint the Director and such Assistant Directors as he from time to time may deem necessary or advisable, all of such appointees to serve during the pleasure of the Secretary. The Director shall receive a salary of $3,000 per annum, together with such other allowances as may be provided for hereinafter. The Director, under the direction of the Chief of Staff of the Army of the United States, shall advise the War Department on matters pertaining to the establishment of the Women's Army Auxiliary Corps; shall operate and administer the corps in accordance with normal military procedure of command and administration and such regulations as may be prescribed by the Secretary of War; shall make recommendations as to plans and policies concerning the employment, training, supply, welfare, and discipline of the corps; and shall perform such other duties as may be prescribed by the Secretary. Each Assistant Director appointed pursuant to this Act shall receive a salary of $2,400 per annum, together with such other allowances as may be provided for hereinafter. Each Assistant Director shall perform such duties as may be prescribed by regulations published by the Secretary of War.	"SEC. 2. From women citizens of the United States, the Secretary of War is authorized to appoint the director and such assistant directors and field directors as he, from time to time, may deem necessary and advisable, all of such appointees to serve during the pleasure of the Secretary. The director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the fourth pay period. The director, under the direction of the Chief of Staff of the Army of the United States, shall advise the War Department on matters pertaining to the establishment of the Women's Army Auxiliary Corps; shall operate and administer the corps in accordance with normal military procedure of command and administration and such regulations as may be prescribed by the Secretary of War; shall make recommendations as to plans and policies concerning the employment, training, supply, welfare, and discipline of the corps; and shall perform such other duties as may be prescribed by the Secretary. Each assistant director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the third pay period; and each field director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the second pay period. Each assistant director and field director shall perform such duties as may be prescribed by regulations published by the Secretary of War.
SEC. 3. The Secretary is authorized to establish and maintain such number of schools as he may consider necessary for the purpose of training candidates for officers of the corps. The Secretary	"SEC. 3. The Secretary is authorized to establish and maintain such number of schools as he may consider necessary for the purpose of training candidates for officers of the corps. The Secre-

Existing Law	Proposed Legislation
may establish by regulation the qualifications for entry into such schools, the course of study to be pursued, and the requirements for graduation therefrom. Candidates for such schools may be selected from women volunteers who are citizens of the United States and during their attendance at such schools shall be furnished living quarters, uniforms as hereinafter provided, medical and dental service, medicines, medical and hospital supplies, hospitalization, subsistence, texts, necessary school supplies, and pay at the rate of $50 per month. The Secretary may appoint officers in such numbers as he may deem necessary for the proper administration of the corps in the grades of first officer, second officer, and third officer and with such responsibilities as he may direct. The pay of officers so appointed shall be $2,000 per annum for each first officer, $1,575 per annum for each second officer, and $1,500 per annum for each third officer, together with such allowances as may be hereinafter provided.	tary may establish by regulations the qualifications for entry into such schools, the course of study to be pursued, and the requirements for graduation therefrom. Candidates for such schools may be selected from enrolled members of the Women's Army Auxiliary Corps or from women volunteers who are citizens of the United States. Transportation in kind and subsistence may be authorized by the Secretary for such candidates from the place from which authorized to proceed to such schools, and return, or, in lieu of furnishing such transportation in kind and subsistence, to pay them travel allowances at the rate of 5 cents per mile and subsistence allowances at the rate of 1 cent per mile for the distance of such journeys by the shortest usually traveled routes. Payment of such allowances for return journeys may be made in advance of the actual performance thereof. During the attendance of such candidates at such schools, they shall be furnished living quarters, uniforms as hereinafter provided, medical and dental service, medicines, medical and hospital supplies, hospitalization, subsistence, textbooks, necessary school supplies, and pay. All enrolled members of the corps shall receive the pay and allowances of their grade as hereinafter provided, and all other candidates shall receive pay at the rate of $50 per month. The Secretary may appoint officers in such number as he may deem necessary for the proper administration of the corps in the grades of first officer, second officer, and third officer, and with such responsibilities as he may direct. First officers, second officers, and third officers shall receive pay and allowances at the rate now or hereafter provided by law for commissioned officers of the Regular Army, without dependents, who are entitled to receive the pay of the third, second, and first pay periods, respectively.
SEC. 4. The Director, each Assistant Director, and each officer of the corps shall receive allowances in lieu of rations at the rate of 60 cents per day and adequate quarters: *Provided*, That when adequate quarters are not furnished, the Director shall receive in lieu thereof the sum of $100 per month, an Assistant Director shall receive in lieu thereof the sum of $80 per month, and all other officers shall receive the sum of $40 per month. The adequacy of quarters furnished shall be conclusively determined in accordance with such regulations as may be issued by the Secretary.	"SEC. 4. The Secretary is authorized to have enrolled in the corps, in addition to the director, assistant director, field directors, and officers hereinabove provided for, by voluntary enrollment, women of excellent character in good physical health, between the ages of twenty-one and forty-five years and citizens of the United States. The personnel of the corps so enrolled shall be distributed, in accordance with regulations prescribed by the Secretary of War, in seven grades corresponding to the seven enlisted grades in the Regular Army; and the Secretary shall have com-

EXISTING LAW	PROPOSED LEGISLATION
	plete authority to define the qualifications for all of the grades in which such personnel are so distributed. Personnel in each of the seven grades shall receive pay and allowances at the rates now or hereafter provided by law for enlisted men, without dependents, in the corresponding enlisted grades in the Regular Army.
SEC. 5. The Secretary is authorized to have enrolled in the corps, in addition to the Director, Assistant Directors, and officers hereinabove provided for, by voluntary enrollment, women of excellent character in good physical health, between the ages of twenty-one and forty-five years and citizens of the United States. The personnel of the corps so enrolled shall be distributed in the grades of first leader, leader, junior leader, and auxiliary, and those in the grade of auxiliary may be assigned ratings as specialist first, second, or third class, in accordance with regulations prescribed by the Secretary of War, who shall have complete authority to define the qualifications for all such leaders and specialists. The pay of first leaders shall be $864 per annum, of leaders $720 per annum, of junior leaders $648 per annum, and for auxiliaries not otherwise classified $21 per month for the first four months of service and $30 per month thereafter. Specialists of the first class shall be paid, in addition to their base pay, the sum of $15 per month, specialists of the second class shall similarly be paid $10 per month, and specialists of the third class shall similarly be paid $5 per month. The Secretary shall provide quarters for the members of the corps so enrolled either on established Army posts, camps, or stations, or on those to be established, or in such other places as he may direct, and may use any of the facilities of the Army for such purpose: *Provided*, That when quarters are not available the Secretary may provide by regulation to pay allowances in lieu thereof to members other than the Director, the Assistant Directors, and the officers at the rate of $1.15 per day.	"SEC. 5. The Secretary shall, so far as practicable, provide quarters for the members of the corps so enrolled either on established Army posts, camps, or stations, or on those to be established, or in such other places as he may direct, and may use any of the facilities of the Army for such purposes.
SEC. 6. The Secretary shall procure and furnish subsistence to all members of the corps, exclusive of the Director, Assistant Directors, and officers, which shall conform so far as is practicable to the subsistence of the Army: *Provided*, That when subsistence in kind is not furnished, the Secretary, by regulation, shall provide payment of allowances in lieu thereof.	"SEC. 6. The Secretary shall procure and furnish subsistence to all members of the corps, exclusive of the director, assistant directors, field directors, and officers, which shall conform so far as is practicable to the subsistence of the Army: *Provided*, That when subsistence in kind is not furnished, the Secretary, by regulation, shall provide for payment of allowances in lieu thereof."
SEC. 7. The Secretary shall prescribe the form of oath which shall be required of all the members of the corps	

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and shall by regulation provide for the induction, including fingerprinting, of all members of the corps. The term of service for all members of the corps shall be one year: *Provided*, That the Secretary may discharge any member for cause, disability, or for the convenience of the Government: *And provided further*, That in time of war, or of national emergency declared by Congress or the President, the Secretary may, by order, extend the term of service to include the period of the war or national emergency plus not to exceed six months, and each contract of enrollment or certificate of appointment shall contain a statement to that effect.

SEC. 8. The Secretary shall prescribe uniforms, insignia, accessories, and equipment for the corps and shall procure and furnish to all members thereof, including the Director, Assistant Directors, and officers, such uniforms, headpieces, shoes, ornaments, insignia of rank and accessories, as well as such organization equipment and supplies, as may be required. The responsibility and accountability of the various individuals and officers for individual clothing and equipment, and for organization equipment and supplies, shall conform so far as is practicable, to the laws and regulations pertaining to the Army in like cases.

SEC. 9. The Secretary shall prescribe regulations for travel and for the payment of travel allowances, including travel allowances from the place of discharge to the place of acceptance for enrollment or appointment, and such regulations and allowances shall be similar to those for travel of the Army.

SEC. 10. The Secretary shall provide medical and dental services, hospitalization, medicines, and medical and hospital supplies for each member of the corps for injuries, sickness, and disease during the time such member is actually serving her enrollment or appointment, such services to conform as nearly as practicable to similar services rendered to the personnel of the Army; and the facilities and personnel of the Army may be used for such services.

SEC. 11. If any member of the corps is physically injured or otherwise incapacitated in line of duty while on active duty, while engaged in authorized training without pay or while engaged in authorized travel with or without pay, or if any member dies as the result of such physical injury or other incapacity, she or her beneficiary shall be entitled to all the benefits prescribed by law for civilian employees of the United States who are physically injured while in the

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SEC. 2. Section 8 of such Act of May 14, 1942, is amended by inserting therein after the words "assistant directors" a comma and the following: "field directors".

SEC. 3. The Secretary of War is authorized to permit members of the Women's Army Auxiliary Corps to make allotments from their pay, under such regulations as he may prescribe, for purposes which in his discretion warrant such action.

performance of duty or who die as a result thereof, and the United States Employees' Compensation Commission shall have jurisdiction in such cases and shall perform the same duties with reference thereto as in the cases of other civilian employees of the United States so injured or otherwise incapacitated: *Provided*, That the benefits shall accrue to any such member or her beneficiary whether the disability or death is the result of sickness or disease contracted in line of duty, while on active duty, when such sickness or disease is proximately caused by service on active duty: *Provided further*, That employees' compensation under this Act shall not be paid concurrently with active-duty pay or pension based upon active service: *And provided further*, That for the purpose of determining the benefits to which they are entitled under the provisions of this Act, members of the corps physically injured or otherwise incapacitated when engaged in authorized training without pay will be held and considered as receiving the pay and allowances they would have received if in a pay status.

The Secretary, under such regulations as he may prescribe, may authorize and require the hospitalization, medical and surgical treatment, and domiciliary care so long as any or all are necessary of members of the corps injured as hereinabove set out and the Secretary is authorized to incur obligations with respect thereto without reference to their line of duty status: *Provided*, That this shall not apply to members of the corps who are treated in private hospitals or by civilian physicians while on furloughs or leaves of absence in excess of twenty-four hours. Members of the corps who suffer injury or contract disease in line of duty while on active duty or while engaged in authorized training without pay shall, under such regulations as the Secretary may prescribe, be entitled at Government expense to such hospitalization, rehospitalization, medical and surgical care in hospital and at their homes as is necessary for the appropriate treatment of such injury or disease until discharged from service, released from active duty, or released from authorized training without pay and during such time the period of such hospitalization or rehospitalization, but not for more than an aggregate of six months after the termination of service if on active duty with pay, to the pay and allowances, whether in money or in kind, that they were entitled to receive at

EXISTING LAW	PROPOSED LEGISLATION
the time such injury was suffered or disease contracted and to the necessary transportation incident to such hospitalization, rehospitalization, and return to their homes when discharged from hospital and such pay and allowances shall be in lieu of monthly compensation payable under the first paragraph of this section, during the period covered thereby; and for any period of hospitalization or rehospitalization when they are not entitled to pay and allowances under the preceding provision they shall be entitled to subsistence at Government expense. In the event any member of the corps dies during her period of enlistment or appointment, the necessary expense for the recovery of the body, its preparation for burial, including the use of such of the uniform and articles of clothing issued to her as may be required, interment or cremation, and transportation of remains, including round-trip transportation and subsistence of an escort to her home or the place where she received orders or enrolled or was appointed, or to such other place as her relatives may designate provided the distance to such other place be not greater than the distance to her home, shall be paid by the United States: *Provided further,* That if the death of the member occurs as a result of an injury in line of duty while on active duty, while engaged in authorized training without pay, or while engaged in authorized travel with or without pay, and while such member is entitled to receive the benefits of the Act of September 7, 1916, the funeral and burial expenses shall be provided by the United States Employees' Compensation Commission under the provisions of section 11 of the Act of September 7, 1916, as amended (5 U. S. C. 761), and in addition to the authority contained in that section, the Commission may embalm and transport the body in a hermetically sealed casket if necessary, to the home of the member. SEC. 12. The corps shall not be a part of the Army, but it shall be the only women's organization authorized to serve with the Army, exclusive of the Army Nurse Corps. Nurses may be enrolled in the corps but nothing in this Act shall be construed to affect or change the Army Nurse Corps as now established by law. SEC. 13. The corps shall be administered by the Secretary through the channels of command of the Army, pursuant to such regulations as the Secretary may promulgate. The Secre-	

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tary is hereby authorized to prepare and issue any and all regulations, rules, or orders and to employ any and all of the facilities of the War Department and of the Army of the United States to carry into effect the provisions of this Act. The Secretary is further authorized to utilize the services of the United States Employment Service to determine the qualifications of applicants for admission into the corps.

Sec. 14. The members of the corps shall be subject to such disciplinary regulations as the Secretary may prescribe, including provisions for the punishment of major infractions by summary discharge from the corps, and shall be subject to the Articles of War pursuant to the second article thereof when applicable.

Sec. 15. Provisions for leave now applicable to the Army of the United States shall also apply to members of the corps. In the case of any person who has left or leaves a position in the employ of the United States, its Territories, or possessions, or the District of Columbia, to join the corps, such person shall, upon the termination of her period of service in the corps, be restored to such position or to a position of like seniority, status, and pay, such restoration to be without loss of seniority; she shall further be entitled to participate in all benefits pursuant to established rules and practices relating to employees on furlough or leave of absence.

Sec. 16. Promotion in all grades of officers who have established or may hereafter establish their qualifications for such promotion shall be made under such regulations as may be prescribed by the Secretary.

Sec. 17. Under such regulations as the Secretary of War may prescribe, members of the corps may be relieved from active duty and called or recalled thereto at any time during their period of service. While on an inactive duty status such members shall not be entitled to pay or allowances in lieu of quarters or subsistence and shall not by reason solely of their appointments, oaths, commissions, enlistments, or status as such members, or any duties or functions performed, be held or deemed to be officers or employees of the United States, or persons holding any office of trust or profit, or discharging any official function under or in connection with any department of the Government of the United States.

Sec. 18. The first sentence of section 125 of the National Defense Act, as amended, down to the first proviso

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thereof is further amended to read as follows:

"It shall be unlawful for any person not an officer or enlisted man of the United States Army, Navy, or Marine Corps to wear the duly prescribed uniform of the United States Army, Navy, or Marine Corps, or any distinctive part of such uniform or a uniform any part of which is similar to a distinctive part of the duly prescribed uniform of the United States Army, Navy, or Marine Corps; and it shall likewise be unlawful for any person not a member of the Women's Army Auxiliary Corps to wear its duly prescribed uniform or any distinctive part thereof, or a uniform any part of which is similar to a distinctive part thereof."

SEC. 19. Section 101 (1) of the Soldiers' and Sailors' Civil Relief Act of 1940 (Public, Numbered 861, Seventy sixth Congress), is hereby amended to read as follows:

"The term 'persons in military service' and the term 'persons in the military service of the United States', as used in this Act shall include the following persons and no others. All members of the Army of the United States, the United States Navy, the Marine Corps, the Coast Guard, the Women's Army Auxiliary Corps, and all officers of the Public Health Service detailed by proper authority for duty either with the Army or the Navy. The term 'military service', as used in this Act, shall signify Federal service on active duty with any branch of service heretofore referred to or mentioned as well as training or education under the supervision of the United States preliminary to induction into the military service. The terms 'active service' or 'active duty' shall include the period during which a person in military service is absent from duty on account of sickness, wounds, leave, or other lawful cause."

SEC. 20. There is hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, such sums as may be necessary for the purpose of carrying out the provisions of this Act.

Approved, May 14, 1942.

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Mr Bu War Dept

Calendar No. 1655

77th Congress } SENATE { Report
2d Session } { No. 1603

WOMEN'S ARMY AUXILIARY CORPS GRADES AND PAY

September 14, 1942.—Ordered to be printed

Mr. Hill, from the Committee on Military Affairs, submitted the following

REPORT

[To accompany S. 2751]

The Committee on Military Affairs, to whom was referred the bill (S. 2751) to amend the act entitled "An act to establish a Women's Army Auxiliary Corps for service with the Army of the United States," approved May 14, 1942, to create the grade of field director in such corps, to provide for enrolled grades in such corps comparable to the enlisted grades in the Regular Army, to provide pay and allowances for all members of such corps at the same rates as those payable to members of the Regular Army in corresponding grades, and for other purposes, having considered the same, submit the following report thereon, with recommendation that it do pass.

Since the original act creating the Women's Army Auxiliary Corps became law, the pay and allowances of enlisted men and officers of the Army and the Navy have been increased considerably by the Pay Readjustment Act of 1942. In addition, the act of July 30, 1942 (Public Law 689, 77th Cong.), creating the Women's Reserve as a branch of the Naval Reserve, places the Naval Women's Corps in the Navy with the higher pay and allowances and with corresponding grades of the officers and enlisted men of the Navy. This situation creates a discrimination against members of the Women's Army Auxiliary Corps and is becoming a great detriment to the Army in its program of recruiting for the Women's Army Auxiliary Corps.

Your committee believe that the personnel of the Women's Army Auxiliary Corps is entitled to equal pay and allowances, grade for grade, with the personnel of the Women's Reserve of the Navy. The proposed legislation will permit the Secretary of War to distribute the enrolled personnel of the corps in seven grades corresponding to the enlisted grades of the Regular Army, and will authorize pay and allowances for these grades equal to the pay and allowances of the seven enlisted grades of the Regular Army.

The War Department states that practical application of the Women's Army Auxiliary Corps Act indicates that the companies of the corps must be comparable to headquarters companies of the Army. The present law provides only four enrolled grades in the corps, first leader, leader, junior leader, and auxiliary. It has been found that women can and must be used in certain cases to replace enlisted men of the first three grades in technical positions. This is particularly true in the complex organization of the Aircraft Warning Service, where women are replacing technicians of the Signal Corps. Your committee believe that the three higher enrolled grades should be provided in the corps so that the women may receive pay and allowances comparable to those of the men they are replacing.

The proposed legislation will also authorize the company-grade officers of the corps (first officers, second officers, and third officers) to receive the same pay and allowances as the company-grade officers of the Regular Army (captains, first lieutenants, and second lieutenants, respectively), without dependents.

It is further noted that the original intention of the act of May 14, 1942, was to give members of the corps pay and allowances comparable to the pay and allowances of members of the Army, and that therefore the pay and allowances of the corps should now be increased in accordance with the increase granted the Army by the Pay Readjustment Act of 1942.

Continued study of the Women's Army Auxiliary Corps program indicates that the responsibilities of the director and assistant directors in the administering of the corps warrant a higher rate of pay than is now provided by law. The corps is authorized by Executive order to recruit to a strength of 25,000 by April 1, 1943. The law limits the corps to a strength of 150,000, and the indications are that it may be necessary and advisable to ask the President to raise the limit in the near future. The proposed legislation would authorize the director to receive the pay and allowances of a colonel (sixth pay period) of the Regular Army, instead of her present pay and allowances which are comparable to those of a major. It would also authorize the assistant directors to receive the pay and allowances of lieutenant colonels (fifth pay period) of the Regular Army, instead of their present pay and allowances which are comparable to those of captains. Neither the director nor the assistant directors would be entitled to the increased allowances for officers with dependents.

The proposed legislation would create a new grade of field director in the corps, with the pay and allowances of a major (fourth pay period) of the Regular Army, without dependents. Assistant directors and field directors will be utilized to supervise and administer groups of companies stationed throughout the United States and in overseas theaters of operations. Whether the grade allotted to such supervisory positions would be that of assistant director or field director will depend on the number of companies in the group and the distance between the stations of the companies. Also, where a group is supervised by an assistant director, it will usually be composed of a sufficient number of companies to warrant the assignment of two or more field directors subordinate to an assistant director as supervisors of subdivisions of the group. This will be the case in most of the Army's territorial subdivisions of the United States, the service commands, where an assistant director will be assigned as service command director, with two or more field directors subordinate to her supervising groups of companies under the direction of the service command director. Your committee believe that the creation of a new grade of field director in the corps is essential to its proper organization and to efficient delegation of responsibility for its administration. The proposed magnitude of the program warrants the employment of a director with pay and allowances of a colonel, assistant directors with pay and allowances of lieutenant colonels, and field directors with pay and allowances of majors.

The proposed legislation would correct an omission in the original law whereby officer candidates, not members of the corps, have been prevented from receiving transportation at Government expense to and from the officers' training school of the corps. It would also authorize the Secretary of War to permit members of the corps to make allotments of their pay for proper purposes in the same manner as officers and enlisted men of the Army. Your committee believe that both of these authorizations should be granted.

A letter from the Secretary of War, transmitting a draft of the proposed legislation, together with his recommendations, is attached hereto and made a part of this report:

War Department,
Washington, September 3, 1942.

Hon. Robert R. Reynolds,
Chairman, Committee on Military Affairs,
United States Senate.

Dear Senator Reynolds: Attached hereto is copy of a letter forwarded this date to Hon. Andrew J. May, chairman, Committee on Military Affairs, House of Representatives, regarding H. R. 7448, a bill to amend the act entitled "An act to establish a Women's Army Auxiliary Corps for service with the Army of the United States," approved May 14, 1942, to provide that the base pay of auxiliaries, officers, and leaders in the Women's Army Auxiliary Corps shall be the same as the base pay of the corresponding grades in the Army, and for other purposes. In this report the War Department submits a draft of a proposed substitute for H. R. 7448.

It is recommended that the draft of substitute bill attached hereto be enacted into law.

Sincerely yours,

Henry L. Stimson,
Secretary of War.

War Department,
Washington, September 3, 1942.

Hon. Andrew J. May,
Chairman, Committee on Military Affairs,
House of Representatives.

Dear Mr. May: The War Department favors the enactment of legislation to accomplish the purpose of H. R. 7448, a bill to amend the act entitled "An act to establish a Women's Army Auxiliary Corps for service with the Army of the United States," approved May 14, 1942, to provide that the base pay of auxiliaries, officers, and leaders in the Women's Army Auxiliary Corps shall be the same as the base pay of the corresponding grades in the Army, and for other purposes. However, this problem has been the subject of considerable study recently in the Department, with the result that a slightly different approach to the pay situation has been evolved, and certain additional matters have been given consideration.

H. R. 7448 would increase the pay of first leaders, leaders, junior leaders, and unclassified auxiliaries of the corps to correspond respectively to the pay of enlisted men of the third, fourth, fifth, and seventh grades in the Army. The pay of first, second, and third officers would be increased respectively to $2,000, $1,875, and $1,800 per annum.

The War Department proposes to provide for an additional officers' grade to be known as field director, and for enrolled grades comparable to the enlisted grades in the Regular Army; to provide pay and allowances for all officers and enrolled grades at the same rates as are paid to comparable grades in the Regular Army, without dependents; to provide for transportation for officer candidates to officers' school and return; and to authorize the Secretary of War to permit members of the corps to make allotments of pay.

Public Law 554 provided a pay scale for the various grades in the Women's Army Auxiliary Corps generally in accord with the then existing pay scale of the Regular Army in comparable grades. Since the enactment of Public Law 554, the pay scale for the Army has been changed. Therefore, in order to carry out the original intention of the Congress of keeping the rates of pay and allowances of the Women's Army Auxiliary Corps in line with those provided for the Army in comparable grades, without dependents, the proposed amendments should be enacted into law.

The proposed amendments would create six grades of officers in the corps in place of five grades provided for in Public Law 554. The director of the corps would receive the same pay and allowances as are now authorized by law for a colonel of the Regular Army, without dependents. The assistant directors would receive the same pay and allowances as a lieutenant colonel without dependents. The new grade provided, that of field director, would receive the same pay and allowances as a major without dependents. The first, second, and third officers would receive the same pay and allowances as are authorized, without dependents, for a captain, first lieutenant, and second lieutenant of the Regular Army, respectively. The director and assistant directors would be essentially staff officers and have supervision over the administration and training of other members of the corps, including supervision of the officers' school. The field directors would supervise groups of companies in the field, and the company officers composed of the first, second, and third officer groups would be in command of the companies and furnish personnel for specialists, such as medical doctors and dentists.

The proposed legislation also changes the enrolled grades provided for in Public Law 354. The present law provides for four grades, first leader, leader, junior leader, and auxiliary; and it also provides for three grades of specialists' ratings. The Army has now done away with specialists' ratings, and it is believed that the organization of the Women's Army Auxiliary Corps should be brought into line with the organization of the Army. Thus the proposed amendments provide for the distribution of enrolled personnel in seven grades comparable in duties and in pay to the seven enlisted grades authorized for the Army.

This adjustment of enrolled grades is necessary and advisable in the opinion of the War Department since the organization of Women's Army Auxiliary Corps companies will correspond more nearly to that of headquarters companies rather than line companies and such an organization requires seven grades for the same reason that headquarters companies of regiments in the Regular Army need them.

The amendment to section 3 providing for transportation to and from the officers' school for all candidates is designed to clarify the authority of the Secretary of War to provide transportation for all candidates to school and return, whether or not they were enrolled members of the corps. It is contemplated initially that certain persons who are deemed to be worthy officer material will be selected for the school who are not enrolled members of the corps.

On August 6, 1942, the Comptroller General ruled that the act of May 16, 1938 (52 Stat. 354), which authorizes military personnel to make voluntary allotments of their pay, could not be construed to apply to members of the Women's Army Auxiliary Corps. The War Department believes that it is desirable to have this authority for members of the corps, and section 3 of the proposed amendment contains this authorization. This will involve no additional expense to the Government other than administrative expense.

It is estimated that the proposed legislation will increase the cost of operation of the Women's Army Auxiliary Corps approximately $6,000,000 for the fiscal year 1943.

The War Department recommends that the enclosed draft of a bill be substituted for H. R. 7448.

The Bureau of the Budget advises that there is no objection to the submission of this report.

Sincerely yours,

Henry L. Stimson,
Secretary of War.

[S. 2751]

A BILL To amend the act entitled "An act to establish a Women's Army Auxiliary Corps for service with the Army of the United States", approved May 14, 1942, to create the grade of field director in such corps, to provide for enrolled grades in such corps comparable to the enlisted grades in the Regular Army, to provide pay and allowances for all members of such corps at the same rates as those payable to members of the Regular Army in corresponding grades, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That sections 2, 3, 4, 5, and 6 of the Act entitled "An Act to establish a Women's Army Auxiliary Corps for service with the Army of the United States," approved May 14, 1942 (Public Law 554, 77th Cong.), and hereby amended to read as follows:

"SEC. 2. From women citizens of the United States, the Secretary of War is authorized to appoint the Director and such Assistant Directors and field directors as he from time to time may deem necessary and advisable, all of such appointees to serve during the pleasure of the Secretary. The Director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the sixth pay period. The Director, under the direction of the Chief of Staff of the Army of the United States, shall advise the War Department on matters pertaining to the establishment of the Women's Army Auxiliary Corps; shall operate and administer the corps in accordance with normal military procedure of command and administration and such regulations as may be prescribed by the Secretary of War; shall make recommendations as to plans and policies concerning the employment, training, supply, welfare, and discipline of the corps; and shall perform such other duties as may be prescribed by the Secretary. Each Assistant Director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the fifth pay period; and each field director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the fourth pay period. Each Assistant Director and field director shall perform such duties as may be prescribed by regulations published by the Secretary of War.

"SEC. 3. The Secretary is authorized to establish and maintain such number of schools as he may consider necessary for the purpose of training candidates for officers of the corps. The Secretary may establish by regulations the qualifications for entry into such schools, the course of study to be pursued, and the requirements for graduation therefrom. Candidates for such schools may be selected from enrolled members of the Women's Army Auxiliary Corps or from women volunteers who are citizens of the United States. Transportation in kind and subsistence may be authorized by the Secretary for such candidates from the place from which authorized to proceed to such schools, and return, or, in lieu of furnishing such transportation in kind and subsistence, to pay them travel allowances at the rate of 5 cents per mile and subsistence allowances at the rate of 1 cent per mile for the distance of such journeys by the shortest usually traveled routes. Payment of such allowances for return journeys may be made in advance of the actual performance thereof. During the attendance of such candidates at such schools, they shall be furnished living quarters, uniforms as hereinafter provided, medical and dental service, medicines, medical and hospital supplies, hospitalization, subsistence, textbooks, necessary school supplies, and pay. All enrolled members of the corps shall receive the pay and allowances of their grade as hereinafter provided, and all other candidates shall receive pay at the rate of $50 per month. The Secretary may appoint officers in such number as he may deem necessary for the proper administration of the corps in the grades of first officer, second officer, and third officer, and with such responsibilities as he may direct. First officers, second officers, and third officers shall receive pay and allowances at the rate now or hereafter provided by law for commissioned officers of the Regular Army, without dependents, who are entitled to receive the pay of the third, second, and first pay periods, respectively.

"SEC. 4. The Secretary is authorized to have enrolled in the corps, in addition to the Director, Assistant Director, field directors, and officers hereinabove provided for, by voluntary enrollment, women of excellent character in good physical health, between the ages of twenty-one and forty-five years and citizens of the United States. The personnel of the corps so enrolled shall be distributed, in accordance with regulations prescribed by the Secretary of War, in seven grades corresponding to the seven enlisted grades in the Regular Army; and the Secretary shall have complete authority to define the qualifications for all of the grades in which such personnel are so distributed. Personnel in each of the seven grades shall receive pay and allowances at the rates now or hereafter provided by law for enlisted men, without dependents, in the corresponding enlisted grades in the Regular Army.

"Sec. 5. The Secretary shall, so far as practicable, provide quarters for the members of the corps so enrolled either on established Army posts, camps, or stations, or on those to be established, or in such other places as he may direct, and may use any of the facilities of the Army for such purposes.

"Sec. 6. The Secretary shall procure and furnish subsistence to all members of the corps, exclusive of the Director, Assistant Directors, field directors, and officers, which shall conform so far as is practicable to the subsistence of the Army: *Provided*, That when subsistence in kind is not furnished, the Secretary, by regulation, shall provide for payment of allowances in lieu thereof."

Sec. 2. Section 8 of such Act of May 14, 1942, is amended by inserting therein after the words "Assistant Directors" a comma and the following: "field directors."

Sec. 3. The Secretary of War is authorized to permit members of the Women's Army Auxiliary Corps to make allotments from their pay, under such regulations as he may prescribe, for purposes which in his discretion warrant such action.

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77TH CONGRESS
2D SESSION

S. 2751

IN THE SENATE OF THE UNITED STATES

SEPTEMBER 7, 1942

Mr. REYNOLDS introduced the following bill; which was read twice and referred to the Committee on Military Affairs

---

A BILL

To amend the Act entitled "An Act to establish a Women's Army Auxiliary Corps for service with the Army of the United States", approved May 14, 1942, to create the grade of field director in such corps, to provide for enrolled grades in such corps comparable to the enlisted grades in the Regular Army, to provide pay and allowances for all members of such corps at the same rates as those payable to members of the Regular Army in corresponding grades, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That sections 2, 3, 4, 5, and 6 of the Act entitled "An Act to establish a Women's Army Auxiliary Corps for service with the Army of the United States", approved

May 14, 1942 (Public Law 554, Seventy-seventh Congress), are hereby amended to read as follows:

"SEC. 2. From women citizens of the United States, the Secretary of War is authorized to appoint the Director and such Assistant Directors and field directors as he from time to time may deem necessary and advisable, all of such appointees to serve during the pleasure of the Secretary. The Director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the sixth pay period. The Director, under the direction of the Chief of Staff of the Army of the United States, shall advise the War Department on matters pertaining to the establishment of the Women's Army Auxiliary Corps; shall operate and administer the corps in accordance with normal military procedure of command and administration and such regulations as may be prescribed by the Secretary of War; shall make recommendations as to plans and policies concerning the employment, training, supply, welfare, and discipline of the corps; and shall perform such other duties as may be prescribed by the Secretary. Each Assistant Director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the fifth pay period;

and each field director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the fourth pay period. Each Assistant Director and field director shall perform such duties as may be prescribed by regulations published by the Secretary of War.

"SEC. 3. The Secretary is authorized to establish and maintain such number of schools as he may consider necessary for the purpose of training candidates for officers of the corps. The Secretary may establish by regulations the qualifications for entry into such schools, the course of study to be pursued, and the requirements for graduation therefrom. Candidates for such schools may be selected from enrolled members of the Women's Army Auxiliary Corps or from women volunteers who are citizens of the United States. Transportation in kind and subsistence may be authorized by the Secretary for such candidates from the place from which authorized to proceed to such schools, and return, or, in lieu of furnishing such transportation in kind and subsistence, to pay them travel allowances at the rate of 5 cents per mile and subsistence allowances at the rate of 1 cent per mile for the distance of such journeys by the shortest usually traveled routes. Payment of such allowances for return journeys may be made in advance of the actual performance thereof. Dur-

ing the attendance of such candidates at such schools, they shall be furnished living quarters, uniforms as hereinafter provided, medical and dental service, medicines, medical and hospital supplies, hospitalization, subsistence, textbooks, necessary school supplies, and pay. All enrolled members of the corps shall receive the pay and allowances of their grade as hereinafter provided, and all other candidates shall receive pay at the rate of $50 per month. The Secretary may appoint officers in such number as he may deem necessary for the proper administration of the corps in the grades of first officer, second officer, and third officer, and with such responsibilities as he may direct. First officers, second officers, and third officers shall receive pay and allowances at the rate now or hereafter provided by law for commissioned officers of the Regular Army, without dependents, who are entitled to receive the pay of the third, second, and first pay periods, respectively.

"Sec. 4. The Secretary is authorized to have enrolled in the corps, in addition to the Director, Assistant Director, field directors, and officers hereinabove provided for, by voluntary enrollment, women of excellent character in good physical health, between the ages of twenty-one and forty-five years and citizens of the United States. The personnel of the corps so enrolled shall be distributed, in accordance with regulations prescribed by the Secretary of War, in seven

grades corresponding to the seven enlisted grades in the Regular Army; and the Secretary shall have complete authority to define the qualifications for all of the grades in which such personnel are so distributed. Personnel in each of the seven grades shall receive pay and allowances at the rates now or hereafter provided by law for enlisted men, without dependents, in the corresponding enlisted grades in the Regular Army.

"SEC. 5. The Secretary shall, so far as practicable, provide quarters for the members of the corps so enrolled either on established Army posts, camps, or stations, or on those to be established, or in such other places as he may direct, and may use any of the facilities of the Army for such purposes.

"SEC. 6. The Secretary shall procure and furnish subsistence to all members of the corps, exclusive of the Director, Assistant Directors, field directors, and officers, which shall conform so far as is practicable to the subsistence of the Army: *Provided*, That when subsistence in kind is not furnished, the Secretary, by regulation, shall provide for payment of allowances in lieu thereof."

SEC. 2. Section 8 of such Act of May 14, 1942, is amended by inserting therein after the words "Assistant Directors" a comma and the following: "field directors".

SEC. 3. The Secretary of War is authorized to permit members of the Women's Army Auxiliary Corps to make

allotments from their pay, under such regulations as he may prescribe, for purposes which in his discretion warrant such action.

Calendar No. 1655

77TH CONGRESS
2D SESSION

S. 2751

[Report No. 1603]

IN THE SENATE OF THE UNITED STATES

SEPTEMBER 7, 1942

Mr. REYNOLDS introduced the following bill; which was read twice and referred to the Committee on Military Affairs

SEPTEMBER 14, 1942

Reported by Mr. HILL, without amendment

A BILL

To amend the Act entitled "An Act to establish a Women's Army Auxiliary Corps for service with the Army of the United States", approved May 14, 1942, to create the grade of field director in such corps, to provide for enrolled grades in such corps comparable to the enlisted grades in the Regular Army, to provide pay and allowances for all members of such corps at the same rates as those payable to members of the Regular Army in corresponding grades, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That sections 2, 3, 4, 5, and 6 of the Act entitled "An Act to establish a Women's Army Auxiliary Corps for service with the Army of the United States", approved May 14, 1942 (Public Law 554, Seventy-seventh Congress), are hereby amended to read as follows:

"SEC. 2. From women citizens of the United States, the Secretary of War is authorized to appoint the Director and such Assistant Directors and field directors as he from time to time may deem necessary and advisable, all of such appointees to serve during the pleasure of the Secretary. The Director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the sixth pay period. The Director, under the direction of the Chief of Staff of the Army of the United States, shall advise the War Department on matters pertaining to the establishment of the Women's Army Auxiliary Corps; shall operate and administer the corps in accordance with normal military procedure of command and administration and such regulations as may be prescribed by the Secretary of War; shall make recommendations as to plans and policies concerning the employment, training, supply, welfare, and discipline of the corps; and shall perform such other duties as may be prescribed by the Secretary. Each Assistant Director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the fifth pay period; and each field director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the fourth pay period. Each Assistant Director and field director shall perform such duties as may be prescribed by regulations published by the Secretary of War.

"SEC. 3. The Secretary is authorized to establish and maintain such number of schools as he may consider necessary for the purpose of training candidates for officers of the corps. The Secretary may establish by regulations the qualifications for entry into such schools, the course of study to be pursued, and the requirements for graduation therefrom. Candidates for such schools may be selected from enrolled members of the Women's Army Auxiliary Corps or from women volunteers who are citizens of the United States. Transportation in kind and subsistence may be authorized by the Secretary for such candidates from the place from which authorized to proceed to such schools, and return, or, in lieu of furnishing such transportation in kind and subsistence, to pay them travel allowances at the rate of 5 cents per mile and subsistence allowances at the rate of 1 cent per mile for the distance of such journeys by the shortest usually traveled routes. Payment of such allowances for return journeys may be made in advance of the actual performance thereof. Dur-

ing the attendance of such candidates at such schools, they shall be furnished living quarters, uniforms as hereinafter provided, medical and dental service, medicines, medical and hospital supplies, hospitalization, subsistence, textbooks, necessary school supplies, and pay. All enrolled members of the corps shall receive the pay and allowances of their grade as hereinafter provided, and all other candidates shall receive pay at the rate of $50 per month. The Secretary may appoint officers in such number as he may deem necessary for the proper administration of the corps in the grades of first officer, second officer, and third officer, and with such responsibilities as he may direct. First officers, second officers, and third officers shall receive pay and allowances at the rate now or hereafter provided by law for commissioned officers of the Regular Army, without dependents, who are entitled to receive the pay of the third, second, and first pay periods, respectively.

"Sec. 4. The Secretary is authorized to have enrolled in the corps, in addition to the Director, Assistant Director, field directors, and officers hereinabove provided for, by voluntary enrollment, women of excellent character in good physical health, between the ages of twenty-one and forty-five years and citizens of the United States. The personnel of the corps so enrolled shall be distributed, in accordance with regulations prescribed by the Secretary of War, in seven grades corresponding to the seven enlisted grades in the Regular Army; and the Secretary shall have complete authority to define the qualifications for all of the grades in which such personnel are so distributed. Personnel in each of the seven grades shall receive pay and allowances at the rates now or hereafter provided by law for enlisted men, without dependents, in the corresponding enlisted grades in the Regular Army.

"SEC. 5. The Secretary shall, so far as practicable, provide quarters for the members of the corps so enrolled either on established Army posts, camps, or stations, or on those to be established, or in such other places as he may direct, and may use any of the facilities of the Army for such purposes.

"SEC. 6. The Secretary shall procure and furnish subsistence to all members of the corps, exclusive of the Director, Assistant Directors, field directors, and officers, which shall conform so far as is practicable to the subsistence of the Army: *Provided,* That when subsistence in kind is not furnished, the Secretary, by regulation, shall provide for payment of allowances in lieu thereof."

SEC. 2. Section 8 of such Act of May 14, 1942, is amended by inserting therein after the words "Assistant Directors" a comma and the following: "field directors".

SEC. 3. The Secretary of War is authorized to permit members of the Women's Army Auxiliary Corps to make allotments from their pay, under such regulations as he may prescribe, for purposes which in his discretion warrant such action.

1877

Union Calendar No. 880

77TH CONGRESS
2D SESSION

H. R. 7539

[Report No. 2475]

IN THE HOUSE OF REPRESENTATIVES

SEPTEMBER 10, 1942

Mr. MAY introduced the following bill; which was referred to the Committee on Military Affairs

SEPTEMBER 21, 1942

Reported with amendments, committed to the Committee of the Whole House on the state of the Union, and ordered to be printed

[Omit the part struck through and insert the part printed in italic]

A BILL

To amend the Act entitled "An Act to establish a Women's Army Auxiliary Corps for service with the Army of the United States", approved May 14, 1942, to create the grade of field director in such corps, to provide for enrolled grades in such corps comparable to the enlisted grades in the Regular Army, to provide pay and allowances for all members of such corps at the same rates as those payable to members of the Regular Army in corresponding grades, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That sections 2, 3, 4, 5, and 6 of the Act entitled "An Act to establish a Women's Army Auxiliary Corps for service with the Army of the United States", approved May 14, 1942 (Public Law 554, Seventy-seventh Congress), are hereby amended to read as follows:

“Sec. 2. From women citizens of the United States, the Secretary of War is authorized to appoint the director and such assistant directors and field directors as he, from time to time, may deem necessary and advisable, all of such appointees to serve during the pleasure of the Secretary. The director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the ~~sixth~~ *fourth* pay period. The director, under the direction of the Chief of Staff of the Army of the United States, shall advise the War Department on matters pertaining to the establishment of the Women's Army Auxiliary Corps; shall operate and administer the corps in accordance with normal military procedure of command and administration and such regulations as may be prescribed by the Secretary of War; shall make recommendations as to plans and policies concerning the employment, training, supply, welfare, and discipline of the corps; and shall perform such other duties as may be prescribed by the Secretary. Each assistant director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the ~~fifth~~ *third* pay period; and each field director shall receive pay and allowances at the rate now or hereafter provided by law for a commissioned officer of the Regular Army, without dependents, who is entitled to receive the pay of the ~~fourth~~ *second* pay period. Each assistant director and field director shall perform such duties as may be prescribed by regulations published by the Secretary of War.

"SEC. 3. The Secretary is authorized to establish and maintain such number of schools as he may consider necessary for the purpose of training candidates for officers of the corps. The Secretary may establish by regulations the qualifications for entry into such schools, the course of study to be pursued, and the requirements for graduation therefrom. Candidates for such schools may be selected from enrolled members of the Women's Army Auxiliary Corps or from women volunteers who are citizens of the United States. Transportation in kind and subsistence may be authorized by the Secretary for such candidates from the place from which authorized to proceed to such schools, and return, or, in lieu of furnishing such transportation in kind and subsistence, to pay them travel allowances at the rate of 5 cents per mile and subsistence allowances at the rate of 1 cent per mile for the distance of such journeys by the shortest usually traveled routes. Payment of such allowances for return journeys may be made in advance of the actual performance thereof. Dur-

ing the attendance of such candidates at such schools, they shall be furnished living quarters, uniforms as hereinafter provided, medical and dental service, medicines, medical and hospital supplies, hospitalization, subsistence, textbooks, necessary school supplies, and pay. All enrolled members of the corps shall receive the pay and allowances of their grade as hereinafter provided, and all other candidates shall receive pay at the rate of $50 per month. The Secretary may appoint officers in such number as he may deem necessary for the proper administration of the corps in the grades of first officer, second officer, and third officer, and with such responsibilities as he may direct. First officers, second officers, and third officers shall receive pay and allowances at the rate now or hereafter provided by law for commissioned officers of the Regular Army, without dependents, who are entitled to receive the pay of the third, second, and first pay periods, respectively.

"SEC. 4. The Secretary is authorized to have enrolled in the corps, in addition to the director, assistant director, field directors, and officers hereinabove provided for, by voluntary enrollment, women of excellent character in good physical health, between the ages of twenty-one and forty-five years and citizens of the United States. The personnel of the corps so enrolled shall be distributed, in accordance with regulations prescribed by the Secretary of War, in seven grades corresponding to the seven enlisted grades in the Regular Army; and the Secretary shall have complete authority to define the qualifications for all of the grades in which such personnel are so distributed. Personnel in each of the seven grades shall receive pay and allowances at the rates now or hereafter provided by law for enlisted men, without dependents, in the corresponding enlisted grades in the Regular Army.

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SEC. 2. Section 8 of such Act of May 14, 1942, is amended by inserting therein after the words "assistant directors" a comma and the following: "field directors".

SEC. 3. The Secretary of War is authorized to permit members of the Women's Army Auxiliary Corps to make allotments from their pay, under such regulations as he may prescribe, for purposes which in his discretion warrant such action.

WAR DEPARTMENT
Bureau of Public Relations
PRESS BRANCH
Tel. - RE 6700
Brs. 3425 and 3438

May 16, 1942.

IMMEDIATE RELEASE

DETAILS OF WOMEN'S ARMY AUXILIARY CORPS

Mrs. William P. Hobby of Houston, Texas, former Chief of the Women's Interests Section of the Bureau of Public Relations of the War Department was sworn in today, in the presence of the Secretary of War and other officials, as Director of the Women's Army Auxiliary Corps.

Organization of the Corps, which was authorized when President Roosevelt signed the bill for its creation, introduced by Representative Edith Nourse Rogers of Massachusetts, will begin immediately, the Honorable Henry L. Stimson, Secretary of War, announced.

The purpose of the Corps, the first of its kind in American military history, is to enlist women volunteers for military service with the Army to replace, and release for combat service enlisted men who are now performing certain non-combatant duties.

The Corps, while not a component part of the Army, is the only women's organization, except the Army Nurse Corps, authorized by law to serve with the Armed Forces. Units of the Corps may be called upon to serve in Zones of Operations, as well as in the Continental United States; but only in non-combat duties. It will not be used to replace the Civil Service Employees now working for the War Department.

Ultimately, the Corps will take over the major part of the Aircraft Warning Service, numerous Army administrative duties and whatever other suitable tasks its members can fulfill. It will be under military discipline, with uniforms and insignia, living quarters, food, and medical and dental treatment provided by the Government.

Under the terms of the bill, the Corps may be expanded to a total of 150,000 women, if and when necessary. General enrollment will not begin until after an Officer and Non-Commissioned Officer cadre has been trained, a matter of approximately 3 months. Formation of this Officer cadre will begin at once.

MORE

The procedure of application and selection is as follows:

Officer candidates must be citizens of the United States, between the ages of 21 and 45. They may be married or single. They must have had at least a high school education, be in good health, and of excellent character.

In order to secure a representative group of women from the entire United States, recruiting is to be on a regional or Corps Area basis. No applications sent to Washington can be given consideration.

Applications must be obtained, in person, from the local recruiting station and when properly filled out, must be returned, in person or by mail, to the appropriate main recruiting station.

The women whose applications are satisfactory will then be notified as to the time and place of examinations. The applications of those who pass these preliminary tests will be sent on to the proper Corps Area, where they will be examined and sifted by a Recruiting Officer and two women assistants.

Each one of the nine Corps Areas will recommend at least sixty candidates for final consideration. In addition to the recommendations made by the Corps Area, Officer Candidates will be recruited from among the volunteers who have served with the Aircraft Warning Service. The War Department will make the final selection of the approximately 450 candidates. These women will be sent to the First Officer Training School, to be located at Fort Des Moines, Iowa.

Fort Des Moines is a military post in the Seventh Corps Area. The existing Induction Center and Reception Center will be moved from the post. The reservation, near the city of Des Moines, consists of 640 acres and has facilities which, with certain expansions, can accommodate 5,000 women.

The Commandant of the School will be Colonel Don C. Faith, Infantry.

The Liaison Officer between the Corps and the War Department will be Major Harold P. Tasker, Coast Artillery Corps.

The candidates will remain at Fort Des Moines for eight weeks of intensive training, which will concentrate on leadership, administration, and military procedure. While in training the candidate will be paid $50 a month.

The candidates who most successfully complete the course will be appointed officers in the Corps with rank determined by their performance in the Training Center. This group will include the Assistant Directors, all of whom will be promoted from the ranks of the commissioned officers rather than

MORE

appointed. Other candidates who successfully complete this course will be given certificates of capacity for future promotion when vacancies occur. Others will remain in the service as Auxiliaries.

The first group of officers will be immediately put in charge of the training of the first unit of auxiliaries which will then, and NOT before then, be enrolled. The only Auxiliaries enrolled prior to the opening of the Replacement Training Center will be about 200 who will be recruited for duty as a Station Complement.

After this original Officer-Candidate group has been selected and trained, there will be NO general recruiting for officer-candidates as such. Promotion will be from the ranks.

General recruiting for these Auxiliaries (corresponding to Privates in the Army) will commence in about three months and will be handled by the regular recruiting stations. Applicants for enrollment must meet the same requirements as to citizenship, age, excellent character, and physical fitness as the first Officer-Candidates, with the exception that they are not required to be at least high school graduates.

For the present this recruiting will be restricted to 700 per month and the majority of these Auxiliaries will be enrolled on their civilian occupational basis. All will be required to complete a basic course of four weeks. A certain percentage will, then, be selected for Specialists Schools, and if successful, will be appointed to the various Specialist grades.

Volunteers now working with the Aircraft Warning Service will be permitted to enroll as rapidly as training facilities become available. After receiving basic training they will, as a rule, be returned to their previous aircraft warning work, to continue as full time members of the Corps.

The compensation will be as follows:

The Director will receive $3,000 a year plus subsistence allowance of sixty cents a day and $100 a month quarters allowance. The Assistant Directors will receive $2,400 a year, plus the same subsistance allowance, and a quarters allowance of $80.

Officers may be appointed in the following grades:

First Officer, $166.67 per month, plus allowance of $40 per month for quarters and sixty cents per day for subsistence; Second Officer, $131.25 per month, plus the same food and quarters allowances; and Third Officer at $125 per month, plus the allowances.

MORE

In the non-commissioned grades, Auxiliaries may hold the rank of First Leader at $72 per month; Leader at $60 per month; and Junior Leader, at $54 per month.

An Auxiliary will receive $21 per month for the first four months and $30 per month thereafter. They may also be graded as First Class Specialist, with $15 per month in addition to base pay; Second Class Specialist, $10 per month in addition to base pay; or Third Class Specialist, $5 per month in addition to base pay.

Every member of the Women's Army Auxiliary Corps will wear the appropriate uniform, insignia, and accessories supplied by the Government.

The term of service is for one year and may be extended by the Secretary of War for the duration of the war, and for not more than six months thereafter.

The Secretary of War may discharge any member for cause, disability, or for the convenience of the Government.

Upon application, members of the Corps may be given an honorable discharge in case of personal reasons of an emergency character. Each such case will be decided on its own merits.

All members of the Corps are entitled to all benefits to which civilian employees are entitled under the United States Employees' Compensation Act. Members also receive all the benefits provided by the Soldiers' and Sailors' Civil Relief Act of 1940. Members of the Corps are entitled to thirty days' leave per year. Enrollment in the Women's Army Auxiliary Corps does not cancel Civil Service status.

For further information about the Women's Army Auxiliary Corps, the prospective applicant is advised to consult her local recruiting station which will have the application blanks and information folders.

APPLICANTS WHO HAVE ALREADY SENT APPLICATIONS TO THE WAR DEPARTMENT ARE ADVISED TO RESUBMIT THEM TO THEIR NEAREST ARMY RECRUITING STATION.

END

DISTRIBUTION: Z

77TH CONGRESS
2D SESSION

H. R. 7812

IN THE HOUSE OF REPRESENTATIVES

NOVEMBER 24, 1942

Mr. SCANLON introduced the following bill; which was referred to the Committee on the Post Office and Post Roads

---

A BILL

Granting free postage to members of the Women's Army Auxiliary Corps (WAAC's), and the members of the Women Accepted for Volunteer Emergency Service (WAVES), and the members of the Women's Auxiliary of the Coast Guard Service (SPARS).

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That any first-class mail matter admissible to the mails as ordinary mail matter which is sent by a member of the Women's Army Auxiliary Corps (WAAC's), the Women Accepted for Volunteer Emergency Service (WAVES), or the Women's Auxiliary of the Coast Guard Service (SPARS), while on active duty or in the active military, naval, or coast guard service of the United States, to any person in the United States, including Territories and possessions thereof, shall be transmitted in the mails free of postage, subject to such rules and regulations as the Postmaster General shall prescribe.

77TH CONGRESS
2D SESSION

H. R. 7812

A BILL

Granting free postage to members of the Women's Army Auxiliary Corps (WAAC's), and the members of the Women Accepted for Volunteer Emergency Service (WAVES), and the members of the Women's Auxiliary of the Coast Guard Service (SPARS).

By Mr. SCANLON

NOVEMBER 24, 1942

Referred to the Committee on the Post Office and Post Roads

November 25, 1942.

MEMORANDUM TO COLONEL T. B. CATRON, EXECUTIVE OFFICER, WAAC.

SUBJECT: Report on Military Occupations Suitable for WAAC Auxiliaries.

1. By Memorandum SPWA 320.2 (10-12-42)E this Branch was requested to study all Military occupations in the Army with a view to determining those jobs which WAAC Auxiliaries may take over in order to release men for combat duty.

2. This duty was assigned to Major Reuben Horchow of this Branch. To assist in the determination, an advisory committee was constituted as follows:

Lieutenant Colonel C. E. Gorman, Surgeon General's Office
Major W. F. Jorgenson, Personnel Research and Statistics Division, Army Air Forces
Third Officer Dolores M. Christy, WAAC
Dr. Ruth Tolman, Department of Agriculture
Dr. Beatrice Dvorak, Occupational Analysis Section, United States Employment Service (Manpower Commission)
Dr. Louise Witmer, Classification and Enlisted Replacement Branch, Adjutant General's Office

With this committee, the following participated by invitation on one or more special phases:

Lieutenant Colonel J. N. Macy, WAAC Headquarters
Major R. I. Powell, WAAC Headquarters
Lieutenant C. H. Sievers, Classification and Enlisted Replacement Branch, Adjutant General's Office
Third Officer Margaret Letzig, WAAC
Third Officer Dorothea Coleman, WAAC
Third Officer Sylvia Shapiro, WAAC
Miss Bertha Nienburg, Women's Bureau, Department of Labor
Mr. J. E. Flaherty, Personnel Research and Statistics Division, Army Air Forces

3. The committee studied each of the Military occupations in the Army and the result of its study with specific recommendations, is attached. The report is so arranged as to permit its use without reference to this communication. To summarize, of the 628 Military occupations listed in AR 615-26 and supplemental Classification Memorandum, 406 occupations were judged suitable and 222 occupations judged unsuitable.

4. For purposes of the study all combat jobs were automatically considered unsuitable. They were checked in factor b though the true basis for unsuitablity is legislation. All non-combatant jobs were weighed against six factors:

a. Physical Strength Required. The job was considered unsuitable if it required physical strength beyond that possessed by the average woman;

b. Army Environment and Working Conditions. If the environment or working conditions under which the job is performed in the Army are unfavorable to the employment, or if it would be impossible to assign WAAC's in units to the locale in which the job occurs, it was listed as unsuitable;

c. Psychological. This factor was checked only when the employment of women in a particular job would definitely be unsuitable in view of the special psychology of women or of enlisted personnel affected;

d. Training Time Necessary. If the training time necessary for effective performance was greatly in excess of that required for men this factor was checked;

e. Occurrence in Civilian Employment. This factor was checked only where such occurrence was related to one of the other factors. By itself alone, it carried little weight;

f. Traditional. This was also a weak factor that carried no weight by itself alone.

A job was considered "unsuitable" if any one of the first four factors or any other combination of factors were checked.

5. All recommendations were made with the suitability of the occupation for the average woman in mind. In the judgment of the committee, if acute shortages arise in those occupations listed as "unsuitable", such occupations might be made suitable for women by breaking down a skilled job into several semi-skilled jobs or individual placement of the exceptional woman. In any case, foreign experience (particularly in Russia) has shown that some women can perform any job if conditions necessitate the utilization of all available manpower.

6. With the exception of four occupations, the committee was unanimous in its recommendations. Those four exceptions were:

275 Classification Specialist
289 Personnel Consultant
290 Personnel Technician
428 Psychological Assistant.

Dr. Tolman, Dr. Dvorak and Dr. Witmer did not feel the psychological effect would be strong enough to rule out these occupations. For the record it should be noted that Lieutenant Colonel Gorman, Major Horchow, Major Jorgenson, Lieutenant Sievers, Third Officer Letzig, Third Officer Coleman, Third Officer Christy, Miss Nienburg and Mr. Flaherty considered these occupations as definitely unsuitable. The majority felt that so long as the WAAC is excluded from combat duty, the use of WAAC auxiliaries in interviewing and classifying recruits for potential combat duty would encounter profound psychological resistance from a large proportion of the recruits and unquestionably an unfavorable public reaction. Should women actually become combatant members of the armed forces, it is possible that a change in the attitude of male recruits and of the public generally might occur which would be sufficiently pronounced to warrant future reconsideration of this decision.

7. If this report is to be a long range, over-all listing of military occupations for the WAAC, the committee feels that all supervisory jobs which may have been listed as "unsuitable", but for which the basic position is listed as "suitable", could probably be included in the suitable category. This is suggested to provide for advancement and promotion; to facilitate transfers; and to afford additional opportunities for training and experience.

Geo R Evans

1 Incl.

Geo. R. Evans
Lt. Col. AGD.
Chief, Classification and Enlisted
Replacement Branch.

/

Waac

November 25, 1942.

Memorandum to Committee Members.

Attached is the report on Military Occupations Suitable for WAAC Auxiliaries.

We should appreciate having you review the report immediately. If you have any criticisms or suggestions, would you communicate with Major Horchow or Lieutenant Christy by telephone, Republic 6700, Extension 3208. If we do not hear from you by 12 noon Saturday, November 27, 1942, we will assume the report meets with your approval.

Dolores M. Christy

1 Incl.

Lieutenant D. M. Christy.

November 25, 1942.

MEMORANDUM TO COLONEL T. B. CATRON, EXECUTIVE OFFICER, WAAC.

SUBJECT: Report on Military Occupations Suitable for WAAC Auxiliaries.

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States Employment Service (Manpower Commission)
Dr. Louise Witmer, Classification and Enlisted Replacement
Branch, Adjutant General's Office

With this committee, the following participated by invitation on one or more special phases:

Lieutenant Colonel J. N. Macy, WAAC
Major R. I. Powell, WAAC
Lieutenant C. H. Sievers, Classification and Enlisted
Replacement Branch, Adjutant General's Office
Lieutenant Margaret Letzig, WAAC
Lieutenant Dorothea Coleman, WAAC
Lieutenant Sylvia Shapiro, WAAC
Miss Bertha Nienburg, Women's Bureau, Department of Labor
Mr. J. E. Flaherty, Personnel Research and Statistics
Division, Army Air Forces

3. The committee studied each of the Military occupations in the Army and the result of its study with specific recommendations, is attached. The report is so arranged as to permit its use without reference to this communication. To summarize, of the 629 Military occupations listed in AR 615-26 and supplemental Classification Memorandum, 407 occupations were judged suitable and 222 occupations judged unsuitable.

4. For purposes of the study all combat jobs were excluded. All non-combatant jobs were weighed against six factors:

a. Physical Strength Required. The job was considered unsuitable if it required physical strength beyond that possessed by the average woman;

b. Army Environment and Working Conditions. If the environment or working conditions under which the job is performed in the Army are unfavorable to the employment, or if it would be impossible to assign WAAC's in units to the locale in which the job occurs, it was listed as unsuitable;

c. Psychological. This factor was checked only when the employment of women in a particular job would definitely be unsuitable in view of the special psychology of women or of enlisted personnel affected;

d. Training Time Necessary. If the training time necessary for effective performance was greatly in excess of that required for men this factor was checked;

e. Occurrence in Civilian Employment. This factor was checked only where such occurrence was related to one of the other factors. By itself alone, it carried little weight;

f. Traditional. This was also a weak factor that carried no weight by itself alone.

A job was considered "unsuitable" if any one of the first four factors or any other combination of factors were checked.

5. All recommendations were made with the suitability of the occupation for the average woman in mind. In the judgment of the committee, if acute shortages arise in those occupations listed as "unsuitable", such occupations might be made suitable for women by breaking down a skilled job into several semi-skilled jobs or individual placement of the exceptional woman. In any case, foreign experience (particularly in Russia) has shown that some women can perform any job if conditions necessitate the utilization of all available manpower.

6. With the exception of four occupations, the committee was unanimous in its recommendations. Those four exceptions were:

275 Classification Specialist
289 Personnel Consultant
290 Personnel Technician
428 Psychological Assistant

Dr. Tolman, Dr. Dvorak and Dr. Witmer did not feel the psychological effect would be strong enough to rule out these occupations. For the record it should be noted that Lieutenant Colonel Gorman, Major Horchow, Major Jorgenson, Lieutenant Sievers, Lieutenant Letzig, Lieutenant Coleman, Lieutenant Christy, Miss Lienburg and Mr. Flaherty considered these occupations as definitely unsuitable. Certainly, so long as the WAAC is excluded from combat duty, the use of WAAC auxiliaries in interviewing and classifying recruits for potential combat duty would meet profound psychological resistance from a large proportion of the recruits and unquestionably an unfavorable public reaction. Should women actually become combatant members of the armed forces, it is possible that a change in the attitude of male recruits and of the public generally might occur which would be sufficiently pronounced to warrant future reconsideration of this decision.

7. If this report is to be a long range, over-all listing of military occupations for the WAAC, the committee feels that all supervisory jobs which may have been listed as "unsuitable", but for which the basic position is listed as "suitable", could probably be included in the suitable category. This is suggested to provide for advancement and promotion; to facilitate transfers; and to afford additional opportunities for training and experience.

Geo R Evans

1 Incl.

Geo. R. Evans,
Lt. Col., AGD.
Chief, Classification and Enlisted
Replacement Branch.

War - WAAC

ADDENDUM November 26, 1942:

A study of the Operations Manual for Placement of women and the Physical Handicapped, published in First Edition, November, 1942 by the United States Civil Service Commission confirmed the findings of the committee.

Report on
Suitability of Military Occupations
For WAAC Auxiliaries

November 25, 1942

Prepared by the Classification and Enlisted Replacement Branch, A.G.O.

References to material other than that developed by this branch should be interpreted as follows:

1. U.S.E.S. survey of "Occupations Suitable for Women" made by the Occupational Analysis Section of the United States Employment Service, February, 1942:
   a. Appropriate column checked where military occupation parallels civilian occupation;
   b. "Not parallel" entered when military occupation requires greater skill than corresponding civilian occupation;
   c. "Not listed" entered where military occupations has no corresponding civilian occupation.
2. Rate of Employment in U.S. taken from Bureau of Census report "Detailed Occupations of Employed Males and Females for the United States, by Regions: March 1940":
   a. Appropriate column checked for military occupations with corresponding civilian occupations, and for strictly military non-combatant jobs where parallel occupation appears in Census Report.
3. "Employed in England" information taken from report compiled June 18, 1942 and additional information for July and August of 1942 obtained from British authorities through the Department of State:
   a. The figure "1" indicates those occupations in which women of the Women's Auxiliary Air Force are employed;
   b. The figure "2" indicates those occupations in which women of the Women's Royal Naval Service are employed;
   c. The figure "3" indicates those occupations in which women of the Auxiliary Territorial Service are employed.

November 25, 1942

Page 2

Suitability of Military Occupations

For WAAC Auxiliaries

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						U.S.E.S. Survey			Emplmt in U.S			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ. & wkg. cond.	Psychological	Trng. time nec.	Occur. in civ. Emplmt.	Traditional	Now Employed	Appar. suitable	Partially suit.	Over 50%	10% to 50%	Under 10%	
004	Aerial Phototopographer	x								Not listed				x		—
005	Brake Inspector, Railway		x	x			x	x		Not listed					x	—
012	Electrician, Automotive	x										x			x	—
013	Diesel Mechanic		x	x	x					Not listed					x	—
014	Automobile Mechanic	x										x			x	1,3.
017	Baker	x								x				x		3
022	Barber	x								Not listed				x		—
024	Blacksmith		x	x						Not parallel					x	—
025	Hammersmith		x	x						Not parallel					x	—
026	Tool Dresser	x								Not parallel					x	—
028	Blueprinter or Photostat Operator	x									x			x		—
029	Boiler Inspector		x	x	x							x			x	—
030	Boilermaker		x	x						Not parallel					x	—
032	Boring Mill Operator	x										x			x	—
033	Brakeman, Railway		x	x				x		Not listed					x	—
034	Bricklayer		x	x								x			x	—
035	Bridge Builder		x	x						Not parallel					x	—
036	Bridge Inspector	x								Not listed					x	—
037	Meat Cutter	x								Not listed					x	—
038	Cabinetmaker	x										x			x	—
039	Cable Splicer, Telephone and Telegraph		x	x	x						x				x	—
040	Automobile Body Repairman	x								Not parallel					x	—
043	Cameraman, Motion Picture	x									x			x		—
044	Canvas Cover Repairman	x								Not parallel					x	1
046	Car Carpenter, Railway		x	x				x	x	Not listed					x	—
047	Traffic Man, Railway	x								Not parallel					x	—
048	Car Mechanic, Railway		x	x				x	x	Not listed					x	—
050	Carpenter, Construction		x	x								x			x	3
052	Chief Clerk	x								x				x		1,2
055	Clerk, General	x								x				x		1,2,3
056	Mail Clerk	x								x				x		3
058	Conductor, Railway	x								Not parallel					x	—
059	Construction Foreman		x	x			x			Not parallel					x	—

Suitability of Military Occupations Continued

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						U.S.E.S. Survey			Emplmt in U.S.			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ. & wkg. cond.	Psychological	Trng. time nec.	Occur. in civ. Emplmt.	Traditional	Now Employed	Appar. suitable	Partially suit	Over 50%	10% to 50%	Under 10%	
060	Cook	x								Not parallel				x		1,2,3
063	Crane Operator	x								Not parallel					x	3
064	Power Shovel Operator		x	x						Not parallel					x	—
065	Able Seaman		x		x					Not listed					x	—
069	Dispatcher, Railway	x								Not parallel					x	—
070	Draftsman	x								Not parallel					x	3
071	Draftsman, Mechanical	x									x				x	3
074	Draftsman, Structural	x									x				x	3
075	Draftsman, Electrical	x									x				x	3
076	Draftsman, Topographic	x									x				x	3
077	Powerhouse Engineer	x										x			x	—
078	Electrician	x										x			x	1,2,3
080	Engineer, Chief, Marine		x		x					Not listed					x	—
081	Engineman, Operating	x								Not listed					x	—
082	Stationary Engineer	x									x				x	—
083	Filter Operator, Water Supply	x								Not parallel					x	—
084	Fireman, Stationary Boiler		x	x						Not listed					x	—
086	Foreman, Machine Shop		x				x					x			x	—
087	Forging-Press Operator	x								Not parallel					x	—
088	Foreman, Foundry		x	x			x			Not listed					x	—
089	Frameman, Telephone and Telegraph	x'								Not listed					x	—
090	Heat Treater		x	x	x					Not listed					x	—
092	Generator Switchboard Operator	x								Not parallel					x	—
093	Horse Breaker	x								Not listed					x	—
094	Horseshoer		x	x						Not listed					x	—
095	Manual and Toll Equipment Repairman, Central Office	x								Not listed					x	—
097	Installer-Repairman, Telephone and Telegraph		x	x	x					Not parallel					x	—
098	Instrument Repairman, Nonelectrical	x										x			x	1,2,3
100	Structural Steel Worker		x	x						Not parallel					x	—
101	Engine Lathe Operator	x										x			x	—
102	Foreman, Laundry	x								Not parallel				x		—
103	Laundry Machine Operator	x								Not parallel			x			2
106	Linotype Operator	x								Not listed					x	—
107	Photolithographer	x								Not listed					x	—
109	Lithographic Engraver	x								Not parallel					x	—
110	Locomotive Engineer		x	x				x	x	Not listed					x	—
111	Fireman, Locomotive		x	x				x	x	Not listed					x	—

Suitability of Military Occupations Continued

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						U.S.E.S. Survey			Emplmt in U.S			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ. & wkg. cond.	Psychological	Trng. time nec.	Occur. in civ. Emplmt.	Traditional	Now Employed	Appar. suitable	Partially suit	Over 50%	10% to 50%	Under 10%	
112	Locomotive Mechanic		x	x				x	x	Not	listed				x	—
113	Woodworking-Machine Operator	x										x			x	3
114	Machinist	x										x			x	3
115	Automatic Telephone System Maintenance Man	x								Not	parallel				x	—
117	Fireman, Marine		x		x						x				x	--
120	Meat or Dairy Inspector	x									x				x	—
121	Utility Repairman		x				x			Not	parallel				x	--
125	Electroplater	x										x			x	—
126	Meteorologist	x								Not	listed				x	1
127	Millwright		x	x			x			Not	parallel				x	—
128	Duplicating Machine Operator	x								x			x			3
129	Molder	x								Not	parallel				x	—
130	Animation Artist, Motion Picture	x								Not	listed			x		—
131	Film Editor, Motion Picture	x								Not	listed			x		—
132	Electrician, Motion Picture	x								Not	parallel				x	—
133	Equipment Maintenance Man, Motion Picture	x								Not	listed				x	—
134	Laboratory Supervisor, Motion Picture	x								Not	listed				x	—
136	Model Maker	x									x				x	3
137	Projectionist, Motion Picture	x								Not	listed				x	1,3
138	Motorcycle Mechanic	x										x			x	3
139	Packer, High Explosives	x									x			x		--
140	Oiler, Locomotive	x									x				x	--
141	Marine Oiler		x		x					Not	parallel				x	—
143	Painter, Automobile	x										x			x	3
144	Painter, General	x										x			x	2,3
145	Painter, Sign	x										x			x	3
147	Parachute Repairman	x									x				x	1
148	Pattern Maker, Wood	x										x			x	—
149	Pharmacist	x										x			x	3
152	Photographer	x								x				x		1
153	Photographer, Photoengraving	x								Not	listed			x		—
154	Photographic Darkroom Man	x								Not	listed			x		1,3
155	Photographer, Portrait	x								Not	parallel			x		1
157	Photographer, Retouching Artist	x								Not	listed			x		1
160	Physics Laboratory Assistant	x								Not	listed			x		—
162	Pipe Fitter		x	x								x			x	--
163	Steam Fitter		x	x								x			x	—
164	Plumber		x	x								x			x	--

Suitability of Military Occupations Continued

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						U.S.E.S. Survey			Emplmt in U.S.			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ. & wkg. cond.	Psychological	Trng. time nec.	Occur. in civ. Emplmt.	Traditional	Now Employed	Appar. suitable	Partially suit	Over 50%	10% to 50%	Under 10%	
165	Lineman, Power		x	x	x					Not listed					x	—
166	Powerman, Telephone		x	x	x					Not listed					x	—
167	Lithographic Pressman	x								Not listed					x	—
168	Printer	x								Not listed					x	—
169	Job Pressman	x								Not listed					x	—
172	Automobile Radiator Man	x										x			x	—
174	Radio Repairman	x									x				x	1,3
177	Radio Operator	x									x				x	1,2
180	Railway Mechanic, General		x	x				x				x			x	—
181	Signal Mechanic, Railway	x								Not listed					x	—
183	Railway Shop Dispatcher	x										x			x	—
185	Railway Towerman or Signal Operator	x								Not listed					x	—
186	Receiving or Shipping Checker	x								x					x	1,2,3
187	Repeaterman, Telephone		x	x	x					Not listed					x	—
189	Rigger		x	x						Not parallel					x	—
190	Riveter, Pneumatic	x								Not parallel					x	—
191	Rodman and Chainman, Surveying		x	x	x					Not parallel					x	—
192	Saddle and Harness Maker	x								Not parallel				x		—
193	Salvage Inspector	x								Not listed					x	—
194	Salvage Man		x	x						Not parallel					x	—
195	Shipping Clerk	x								x				x		2,3
196	Sanitary Technician	x								x				x		—
198	Section Foreman, Railway		x					x		Not parallel					x	—
199	Section Hand, Railway		x	x				x		Not listed					x	—
200	Sewing Machine Operator	x								x			x			—
201	Sheet Metal Worker	x										x			x	3
202	Carpenter, Ship		y	x						Not parallel					x	—
203	Packing Case Maker	x									x			x		1
204	Shoe Repairman	x									x				x	1,3
205	Shop Engineer, Railway	x									x				x	—
207	Sound Recording Equipment Maintenance Man	x									x				x	—
208	Film Recorder, Motion Picture	x								Not listed					x	—
211	Station Agent, Railway	x								Not listed					x	—
212	Statistical Clerk	x								x				x		2,3
213	Stenographer	x								x			x			1,2,3
214	Stonemason		x	x								x			x	3
215	Storage Battery Electrician	x									x				x	1,2

Suitability of Military Occupations Continued

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						U.S.E.S. Survey			Emplmt. in U.S.			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ. & wkg. cond.	Psychological	Trng. time nec.	Occur. in civ. Emplmt.	Traditional	Now Employed	Appar. suitable	Partially suit	Over 50%	10% to 50%	Under 10%	
220	Water Pumpman	x									x				x	—
226	Surgical Technician, Veterinary	x								Not listed				x		--
227	Surveyor	x									x				x	—
228	Instrument Man, Surveying	x										x			x	—
230	Surveyor, Topographic	x									x				x	—
231	Switchboard Installer, Telephone and Telegraph		x	x						Not parallel					x	--
232	Switchboard Installer, Manual Telephone and Telegraph		x	x						Not parallel					x	—
233	Switchman, Railway		x	x				x		Not listed					x	—
234	Tailor	x								Not listed				x		1,2,3
235	Teamster		x	x	x					Not listed					x	—
236	Telegraph Operator	x								Not listed				x		1,2,3
237	Teletypewriter Operator	x								Not listed				x		1,2,3
238	Lineman, Telephone and Telegraph		x	x	x					Not listed					x	—
239	Teletypewriter Mechanic	x								Not listed					x	3
240	Tire Rebuilder	x									x			x		3
241	Tool Maker	x										x			x	—
242	Toolroom Keeper	x									x			x		--
243	Geodetic Computer	x								x				x		--
244	Tractor Driver	x									x				x	3
245	Truck Driver, Heavy		x	x	x					Not listed					x	3
247	Typist	x								x			x			1,2,3
248	Upholsterer	x										x			x	--
250	Veterinary Technician	x								Not listed				x		--
252	Foreman, Warehouse	x									x				x	--
253	Water Supply Foreman	x								Not parallel					x	--
254	Water Supply Engineer	x										x			x	—
255	Welder, Electric Arc	x									x				x	3
256	Welder, Combination	x									x				x	3
257	Welder, Acetylene	x									x				x	3
259	Well Driller		x	x						Not listed					x	—
261	Wire Chief, Telephone and Telegraph	x										x			x	—
264	X-Ray Technician	x								x				x		1,3
265	Yardmaster		x				x	x				x			x	—
266	Dispatcher Clerk (Crew)	x								x					x	—
267	Translator	x								Not listed				x		3
268	Accountant	x								x			x			1,2,3
269	Cashier	x								x			x			3

Suitability of Military Occupations Continued

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						U.S.E.S. Survey			Emplmt in U.S.			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ.& wkg.cond.	Psychological	Trng. Time nec.	Occur.in civ. Emplmt.	Traditional	Now Employed	Appar. suitable	Partially suit	Over 50%	10% to 50%	Under 10%	
270	Cooper	x										x			x	—
271	Longshoreman		x	x	x					Not	listed				x	—
272	Key Punch Machine Operator	x								x			x			No info
274	Public Relations Man	x								Not	listed			x		—
275	Classification Specialist		x		x	x				x				x		—
282	Office Machine Serviceman	x								Not	listed				x	—
283	Athletic Instructor		x		x					Not	listed			x		—
284	Actor	x								Not	listed			x		—
285	Cameraman Animated Motion Picture	x									x				x	—
286	Director, Motion Picture	x								Not	listed			x		—
287	Sound Editor, Motion Picture	x								Not	listed			x		—
288	Playwright	x								Not	listed			x		—
289	Personnel Consultant		x		x	x				Not	listed			x		—
290	Personnel Technician		x		x	x				Not	listed			x		1
292	Chemist	x								x					x	—
293	Chemical Engineer	x								x					x	—
298	Job Analyst		x		x					x				x		—
299	Groundman, Telephone and Telegraph		x	x	x					Not	parallel				x	—
300	Tool Designer	x										x			x	—
301	Investigator	x								Not	listed			x		—
303	Hospital Orderly	x								Not	listed			x		1,2,3
304	Electric Motor Repairman	x								Not	parallel				x	1,3
307	Fingerprinter	x									x			x		—
309	Telephone Operator	x								x			x			1,2,3
310	Concrete-Mixer Operator		x	x						Not	listed				x	—
314	Motorboat Operator		x		x					Not	listed				x	1,3
315	Highway Maintenance Man		x	x						Not	listed				x	—
317	Monotype Operator	x								Not	parallel				x	—
318	Casting Machine Operator	x								Not	parallel				x	—
319	Tractor Mechanic	x										x			x	—
320	Interpreter	x								Not	listed			x		3
322	Refrigeration Mechanic	x								Not	parallel				x	—
323	Stock Record Clerk	x									x			x		1,2,3
324	Stock Clerk	x									x			x		1,2,3
329	Lumberjack		x	x						Not	parallel				x	—
334	Welder, Spot	x									x				x	1
337	Foreman, Auto Repair Shop	x								Not	parallel				x	—
338	Instrument Repairman, Electrical	x										x			x	1,3
339	Jackhammer Operator		x	x						Not	listed				x	—

Suitability of Military Occupations Continued

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						U.S.E.S. Survey			Emplmt in U. S.			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ.& wkg.cond.	Psychological	Trng. Time nec.	Occur.in civ. Emplmt.	Traditional	Now Employed	Appar suitable	Partially suit	Over 50%	10% to 50%	Under 10%	
340	Parachute Packer	x									x				x	1,2
341	Shop Maintenance Mechanic		x	x								x			x	—
342	Master Mechanic		x				x					x			x	—
343	Burner, Acetylene		x	x							x				x	—
344	Chauffeur	x									x				x	1,3
345	Truck Driver, Light	x									x				x	1,3
348	Parts Clerk, Automobile	x								Not parallel				x		1,2,3
349	Axman, Surveying		x	x						Not listed					x	—
350	Bookkeeper, General	x								x				x		1,2,3
353	Earth-Boring Machine Operator		x	x						Not listed					x	—
355	File Clerk	x								x				x		1,2,3
356	Foreman or Superintendent Labor		x		x	x				Not parallel					x	—
357	Gas and Oil Man	x								Not parallel					x	—
358	Glassblower	x								Not listed				x		—
359	Highway Construction Machine Operator		x	x						Not listed					x	—
360	Hoist Operator	x									x				x	—
365	Optician	x								Not listed					x	—
366	Orthopedic Mechanic	x								Not parallel				x		—
367	Oven Fireman		x	x	x					Not listed					x	—
368	Personnel Clerk	x								x				x		1,2,3
370	Proofreader	x									x			x		1,2,3
371	Purchasing Agent or Buyer	x										x			x	
372	Rock Crusher Operator		x	x						Not listed					x	
374	Stock Control Clerk	x									x			x		1,2,3
377	Tracer	x									x				x	1
378	Motorcyclist		x		x						x				x	2,3
383	Fire Fighter	x								Not listed					x	—
384	Installer, Toll Telephone and Telegraph		x	x						Not listed					x	—
385	Power Plant Installer		x	x							x				x	—
386	Entertainer	x								Not listed				x		—
387	Cartographer	x									x			x		1,2
390	Auditor	x								x				x		—
391	Librarian	x								Not parallel			x			2,3
399	Reporter	x								Not parallel				x		—
400	Tabulating Machine Operator	x								Not listed			x			—
403	Telephone Inspector	x								Not parallel				x		—
405	Clerk-Typist	x								x			x			1,2,3
407	Sound Mixer, Motion Picture	x								Not parallel					x	—

Suitability of Military Occupations Continued

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						U.S.E.S. Survey			Emplmt in U.S			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ.& wkg.cond.	Psychological	Trng. time nec.	Occur.in Civ. Emplmt.	Traditional	Now Employed	Appar Suitable	Partially suit	Over 50%	10% to 50%	Under 10%	
409	Medical Technician	x								x				x		1,3
410	Dispatcher, Motor Vehicle	x								Not parallel					x	—
411	Chemical Laboratory Assistant	x								x				x		1,2,3
412	Engine Specialist (Machinist, Automobile)	x										x			x	—
413	Motor Inspector	x										x		x		3
414	Carburetor Specialist	x								Not parallel					x	—
415	Transmission Man, Sound (Electrician)	x								Not parallel					x	—
416	Bookbinder	x								Not listed				x		—
418	Skier		x		x					Not listed					x	—
425	Tabulating Machine Repairman	x								Not listed					x	—
428	Psychological Assistant		x		x	x				Not listed				x		—
431	Machinist Helper	x									x				x	1,3
432	Bandsman, Clarinet	x								Not listed				x		—
433	Bandsman, Cornet or Trumpet	x								Not listed				x		3
434	Bandsman, Drum, Bass	x								Not listed				x		3
435	Bandsman, Drum, Snare	x								Not listed				x		3
436	Bandsman, Euphonium or Baritone	x								Not listed				x		—
437	Bandsman, Flute or Piccolo	x								Not listed				x		—
438	Bandsman, French Horn	x								Not listed				x		—
439	Bandsman, Saxophone	x								Not listed				x		—
440	Bandsman, Trombone	x								Not listed				x		—
441	Bandsman, Tuba	x								Not listed				x		—
442	Entertainment Director	x								Not listed				x		No info
443	Firearms Identification Specialist	x								Not parallel					x	No info
444	Radio Dispatcher, Police	x								Not parallel					x	No info
445	Criminal Identification Laboratory Technician	x								Not listed					x	No info
446	Vice Squad Patrolman	x								Not listed					x	No info
447	Traffic Patrolman	x								Not listed					x	No info
449	Process Background Supervisor	x								Not listed				x		No info
450	Dietitian	x								x				x		3
453	Special Effects Supervisor	x								Not listed				x		—
454	Diver, Marine		x	x	x					Not listed					x	—
455	Diver's Helper, Marine		x	x	x					Not listed					x	—
456	Calker		x	x							x				x	—
457	Shop Clerk	x								Not parallel				x		1,3
458	Dog Trainer	x								Not listed				x		—
459	Sawmill Machine Operator		x	x	x					Not parallel					x	—
460	Foreman, Milling		x		x		x			Not parallel					x	—

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						U.S.E.S. Survey			Emplmt in U.S.			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ. & wkg. cond.	Psychological	Trng time nec.	Occur. in Civ. Emplmt.	Traditional	Now Employed	Appar. Suitable	Partially suit	Over 50%	10% to 50%	Under 10%	
461	Lumber Grader, Tallyman		x		x						x				x	—
462	Forest Products, Tallyman		x		x					x					x	—
463	Scaler, Log		x	x	x					Not	parallel				x	—
464	Millwright, Sawmill		x	x	x					Not	parallel				x	—
465	Timber Cruiser		x	x	x					Not	parallel				x	—
466	Logging Foreman		x	x	x		x			Not	parallel				x	—
467	Air Compressor Operator		x	x	x						x				x	—
468	Stevedore Foreman		x	x	x	x				Not	parallel				x	—
469	Hatch Foreman		x	x	x					Not	parallel				x	—
470	Cargo Checker		x		x					Not	listed				x	—
471	Dock Boss		x	x	x	x				Not	parallel				x	—
472	Walking Boss		x	x	x					Not	parallel				x	—
473	Winch Operator		x	x	x					Not	parallel				x	—
474	Header		x	x	x					Not	listed				x	—
475	Hatch Tender or Gangwayman		x	x	x					Not	listed				x	—
500	Trainee, Branch Immaterial		x		x					Not	listed		No	info		—
501	Administrative and Technical Clerk	x								Not	parallel			x		1,3
502	Administrative Noncommissioned Officer	x								Not	listed		No	info		1,3
503	Liaison Agent		x		x					Not	listed		No	info		—
504	Ammunition Handler		x		x					Not	listed		No	info		—
505	Ammunition Noncommissioned Officer		x		x					Not	listed		No	info		—
506	Portable Power Generator Repairman	x								Not	parallel				x	—
507	Bath Attendant		x		x					Not	listed		No	info		—
509	Enlisted Bombardier		x		x					Not	listed		No	info		—
510	Aircraft Warning Plotter	x								Not	listed		No	info		3
511	Armorer	x										x			x	1,3
512	Aircraft Warning Teller	x								Not	listed		No	info		3
513	Airplane Inspector	x										x			x	1
514	Radar Operator, Designated Set	x								Not	listed		No	info		—
515	Aircraft Warning Filterer	x								Not	listed		No	info		—
516	Filter Board Instructor	x								Not	listed		No	info		—
517	Plotting Board Supervisor, Aircraft Warning	x								Not	listed		No	info		—
518	Aircraft Observation Instructor	x								Not	listed		No	info		—
519	Army Air Forces Painter	x								Not	parallel				x	1
521	Basic		x		x					Not	listed		No	info		—
522	Guard-Patrolman		x		x					Not	listed				x	—
525	Balloon Gas Chief	x								Not	listed		No	info		—

Suitability of Military Occupations Continued

Army SS. No.	Job Title	Recommendation Suitable	Recommendation Not Suit	If unsuitable, by reason of factors checked: Phys. strgth. reqd.	Army environ. & wkg. cond.	Psychological	Trng. time nec.	Occur. in Civ. Emplmt.	Traditional	U.S.E.S. Survey: Now Employed	Appar. Suitable	Partially suit	Emplmt in U.S: Over 50%	10% to 50%	Under 10%	Employed in England
526	Balloon Maneuvering Crewman	x								Not	listed		No	info		1
527	Antiaircraft Fire Detedtor Operator	x								Not	listed		No	info		--
528	Airplane Hydraulic Specialist	x								Not	parallel				x	--
529	Wrecker Operator		x	x						Not	parallel				x	-
531	Cannoneer		x		x					Not	listed		No	info		--
532	Scout Car Commander		x		x					Not	listed		No	info		--
533	Demolition Specialist		x		x					Not	listed		No	info		--
534	Chaplain's Assistant	x								Not	parallel			x		—
535	Balloon Gas Handler	x								Not	listed		No	info		—
536	Chief of Breech		x		x					Not	listed		No	info		—
537	Chief Switchboard Operator, Local Battery		x		x					Not	parallel		No	info		--
539	Chief of Section		x		x					Not	listed		No	info		--
540	Chief Switchboard Operator, Common Battery	x								Not	parallel		x			—
541	Bridge Foreman		x	x	x					Not	parallel				x	—
542	Communication Chief	x								Not	parallel				x	--
543	Radio Intelligence Control Chief	x								Not	listed		No	info		--
544	Control Station Operator	x								Not	parallel		No	info		--
545	Chief Telegraph Operator	x								Not	listed			x		—
546	Coxswain, Mine Yawl		x		x					Not	listed		No	info		—
547	Pilot,L Boat		x		x					Not	listed				x	--
548	Army Airplane Fabric and Dope Worker	x								Not	parallel				x	1
549	Airplane Radiator Repairman	x								Not	parallel				x	1
550	Airplane Woodworker	x								(Parallel)		x			x	1
551	Control Board Operator	x								Not	listed		No	info		--
552	Army Control Tower Operator	x										x			x	--
553	Airplane Electrical Shop Chief	x								Not	parallel				x	--
554	Airplane Sheet Metal Shop Chief	x								Not	parallel				x	--
555	Airplane Sheet Metal Worker	x										x			x	1
556	Airplane Machine Shop Chief	x								Not	parallel				x	--
557	Depot Engineering Chief	x								Not	listed		No	info		—
558	Airplane Instrument Shop Chief	x								Not	parallel				x	—
559	Glider Mechanic	x								Not	parallel				x	—
560	Pigeoneer	x								Not	listed		No	info		1
563	Horse Artillery Driver		x		x					Not	listed		No	info		--
565	Pack Driver		x		x					Not	listed		No	info		--
566	Duty Noncommissioned Officer		x		x					Not	listed		No	info		--
576	Flash Ranging Observer		x		x					Not	listed		No	info		--
577	Instrument Sergeant		x		x					Not	listed		No	info		--

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						U.S.E.S. Survey			Emplmt. in U.S.			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ.& wkg.cond.	Psychological	Trng. time nec.	Occur.in civ. Emplmt.	Traditional	Now Employed	Appar. Suitable	Partially suit	Over 50%	10% to 50%	Under 10%	
578	Chief of Range		x		x					Not	listed		No	info		—
579	Casemate Electrician		x		x					Not	parallel		No	info		—
585	First Sergeant		x		x					Not	listed		No	info		—
586	Sound Ranging Observer		x		x					Not	listed		No	info		—
587	Flash Switchboard Operator		x		x					Not	parallel		No	info		—
590	Laborer		x	x	x					Not	parallel				x	3
591	Sterilization and Bath Foreman		x		x					Not	listed		No	info		—
592	Fuse Setter		x		x					Not	listed		No	info		—
595	Field Wire Chief		x		x					Not	parallel		No	info		—
601	Antiaircraft Gunner		x		x					Not	listed		No	info		—
602	Gun Commander		x		x					Not	listed		No	info		—
603	Gunner		x		x					Not	listed		No	info		—
604	Light Machine Gunner		x		x					Not	listed		No	info		—
605	Heavy Machine Gunner		x		x					Not	listed		No	info		—
606	Antiaircraft Machine Gunner		x		x					Not	listed		No	info		—
607	Mortar Gunner		x		x					Not	listed		No	info		—
608	Gun Pointer		x		x					Not	listed		No	info		—
610	Antitank Gunner		x		x					Not	listed		No	info		—
611	Aerial Gunner		x		x					Not	listed		No	info		—
612	Airplane Armorer-Gunner		x		x					Not	listed		No	info		—
613	Computer	x								Not	parallel			x		—
615	Chief Balloon Rigger	x								Not	listed		No	info		—
616	Tank Gunner		x		x					Not	listed		No	info		—
618	Balloon Envelope Repairman	x								Not	listed		No	info		1
619	Balloon Rigger	x								Not	parallel				x	—
620	Parachute Rigger and Repairman	x								Not	listed		No	info		1
621	Parachute Shop Chief	x								Not	listed		No	info		—
625	Officer Candidate		x		x					Not	listed		No	info		—
627	Special Service School Instructor	x								x			x			—
628	Senior Technical Instructor	x								x			x			—
629	Student		x		x					Not	listed		No	info		—
631	Intelligence Noncommissioned Officer		x		x					Not	listed		No	info		—
632	Chemical Inspector	x								Not	parallel				x	—
634	Antiaircraft Fire Control Electrician	x								Not	parallel				x	—
635	Antiaircraft Searchlight Electrician	x								Not	parallel				x	—
636	Intelligence Observer		x		x					Not	listed		No	info		—
637	Aircraft Warning Plotting Board Installer-Repairman	x								Not	listed		No	info		—

Suitability of Military Occupations Continued

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						U.S.E.S. Survey			Emplmt in U.S			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ. & wkg. cond	Psychological	Trng. time nec.	Occur. in Civ. Emplmt.	Traditional	Now Employed	Appar. Suitable	Partially suit	Over 50%	10% to 50%	Under 10%	
638	Telephone Equipment Installer, Repairman, Local Battery		x		x					Not	listed		No	info		—
640	Teletypewriter Switchboard Operator	x								Not	listed		No	info		1,3
641	Field Lineman		x	x	x					Not	parall	el	No	info		—
644	Chief Field Lineman		x		x					Not	parall	el	No	info		—
645	Fire Control Instrument Operator		x		x					Not	listed		No	info		3
646	Telephone and Telegraph Equipment Repairman	x								Not	parall	el			x	—
649	Radio Repairman, Fixed Station	x									x				x	1
650	Switchboard Operator Local Battery		x		x					Not	parall	el	No	info		—
651	Platoon Sergeant		x		x					Not	listed		No	info		—
652	Section Leader		x		x					Not	listed		No	info		—
653	Squad Leader		x		x					Not	listed		No	info		—
654	Listener, Underwater	x								Not	listed		No	info		—
655	Listener, Sound Locator	x								Not	listed		No	info		—
656	Mine Loader		x		x					Not	listed		No	info		—
657	Litter Bearer		x		x					Not	listed		No	info		—
658	Link Trainer-Instructor	x								Not	listed		No	info		—
659	Technical Instructor	x								x			x			—
660	Tank Mechanic, Minor Maintenance	x								Not	parall	el			x	—
661	Tank Engine Mechanic, Minor Maintenance	x								Not	parall	el			x	—
662	Aerial Torpedo Mechanic	x								Not	parall	el			x	—
663	Armament Chief	x								Not	parall	el			x	—
664	Armament Inspector	x								Not	parall	el			x	—
665	Fuel Tank Repairman	x								Not	parall	el			x	—
666	First-Aid Man		x		x					Not	listed		No	info		—
667	Message Center Clerk	x								Not	parall	el		x		3
668	Truckmaster	x								Not	listed				x	—
670	Master Gunner		x		x					Not	listed		No	info		—
672	Veterinary Noncommissioned Officer	x								Not	listed		No	info		—
673	Medical Noncommissioned Officer	x								Not	listed		No	info		1,3
674	Message Center Chief	x								Not	listed				x	—
675	Messenger		x		x					Not	parall	el	No	info		—
676	Messenger Dispatcher		x		x					Not	listed		No	info		—
677	Military Policeman		x		x	x				Not	listed		No	info		—
678	Power Turret and Gunsight Specialist	x								Not	parall	el	No	info		—
679	Motorcycle Scout		x		x					Not	parall	el	No	info		—
680	Mine Assembler	x								Not	parall	el			x	—

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						U.S.E.S. Survey			Emplmt in U.S.			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ.& wkg.cond.	Psychological	Trng. time nec.	Occur.in civ. Emplmt.	Traditional	Now Employed	Appar. Suitable	Partially suit	Over 50%	10% to 50%	Under 10%	
682	Automatic Pilot Specialist	x								Not	parallel				x	—
683	Bombsight Mechanic	x								Not	parallel				x	—
684	Airplane Power Plant Specialist	x								Not	parallel				x	—
685	Airplane Electrical Specialist	x								Not	parallel				x	—
686	Airplane Instrument Specialist	x								Not	parallel				x	—
687	Airplane Propeller Specialist	x								Not	parallel				x	—
689	Airplane Cable Mechanic	x								Not	parallel				x	1
690C	Antiaircraft Fire Control Observer, Flank Station	x								Not	listed		No	info		3
692	Height Finder Observer	x								Not	listed		No	info		1,3
693	Instrument Observer	x								Not	listed		No	info		—
694	Spotter	x								Not	listed		No	info		1
695	Orderly		x		x					Not	listed		No	info		—
696	Ambulance Orderly	x								Not	listed			x		—
697	Stable Orderly	x								Not	listed				x	—
698	Acoustic Corrector Operator	x								Not	listed		No	info		—
699	Ambulance Driver	x								Not	parallel				x	—
700	Veterinary Ambulance Orderly	x								Not	listed			x		—
701	Reel Unit Operator		x		x					Not	listed		No	info		—
702	Crash Boat Operator	x								Not	listed				x	—
704	Telephone Operator, Field		x		x					Not	parallel		No	info		—
706	Sterilizer Operator	x								Not	parallel				x	—
708	Airplane Engine Overhaul Shop Chief	x								Not	parallel				x	—
710	Stable Sergeant	x								Not	listed		No	info		—
711	Cargador		x	x	x					Not	listed		No	info		—
712	Packer, Animal		x	x	x					Not	listed		No	info		—
713	Packmaster		x	x	x					Not	listed		No	info		—
717	Foreman, Oxygen and Acetylene Plant	x								Not	parallel				x	—
718	Operator, Acetylene Plant	x								Not	listed				x	—
719	Operator, Oxygen and Nitrogen Plant	x								Not	listed				x	—
720	Airplane Wood Shop Chief	x								Not	parallel				x	—
721	Panel and Code Operator	x								Not	listed			x		—
722	Submarine Mine Planter		x		x					Not	listed		No	info		—
725	Plotter	x								Not	parallel				x	1,3
726	Processor		x		x					Not	parallel			x		—
727	Filter Unit Operator	x								Not	parallel				x	—
729	Pioneer		x		x					Not	listed		No	info		—
730	Provost Sergeant		x		x					Not	listed		No	info		—

Army SS. No.	Job Title	Recommend- Suitable	Recommend- Not Suit	If unsuitable, by reason of factors checked: Phys. strgth. reqd.	Army environ.& wkg.cond	Psychological	Trng. time nec.	Occur.in civ. Emplmt.	Traditional	U.S.E.S. Survey: Now Employed	Appar. Suitable	Partially suit	Emplmt in U.S: Over 50%	10% to 50%	Under 10%	Employed in England
733	Reconnaissance or Scout Car Driver		x		x					Not parallel			No info			—
734	Half-Track Driver		x		x					Not parallel			No info			—
736	Tank Driver		x		x					Not parallel			No info			—
741	Switchboard Operator, Common Battery	x								x			x			1,3
742	Reader	x								Not parallel				x		—
743	Recorder		x		x					Not parallel			No info			3
744	Reconnaissance Noncommissioned Officer		x		x					Not listed			No info			—
745	Rifleman		x		x					Not listed			No info			—
746	Automatic Rifleman		x		x					Not listed			No info			—
747	Army Airplane and Engine Mechanic	x								Not parallel					x	
748	Army Airplane Mechanic-Gunner		x		x					Not listed			No info			—
749	Army Airplane Engine Mechanic (Inspection and Maintenance)	x								Not parallel					x	1
750	Airplane Crew Chief	x								Not parallel					x	—
751	Airplane Flight Chief	x								Not listed			No info			—
752	Airplane Line Chief	x								Not parallel					x	—
753	Chief Submarine Mine Planter		x		x					Not listed			No info			—
754	Army Air Forces Radio Mechanic	x								Not parallel					x	—
755	Army Air Forces Radio Operator		x		x					Not parallel					x	—
756	Army Air Forces Radio Operator and Mechanic		x		x					Not parallel					x	—
757	Army Air Forces Radio Operator Mechanic-Gunner		x		x					Not listed			No info			—
758	Airplane Propeller Shop Chief	x								Not parallel					x	—
759	Radio Mechanic CNS	x								Not parallel					x	—
760	Radio Operator AACS	x								Not parallel					x	—
761	Scout		x		x					Not listed			No info			—
762	Army Airplane Engine Mechanic (Depot Overhaul)	x								Not parallel					x	—
763	Searchlight Operator	x								Not listed					x	—
764	Signal Noncommissioned Officer		x		x					Not listed			No info			—
765	Visual Signalman		x		x					Not listed			No info			—
766	Radio Operator, High Speed	x									x				x	—
767	Radio Telephone Operator	x								Not listed			No info			1
769	Chief Storekeeper	x								Not parallel				x		—
770	Enlisted Airplane Pilot		x		x					Not listed			No info			3
771	Enlisted Glider Pilot		x		x					Not listed			No info			—
772	Enlisted Liaison Pilot Mechanic		x		x					Not listed			No info			—
773	Enlisted Service Pilot	x								Not listed			No info			—

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						U.S.E.S. Survey			Emplmt in U S			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ.& wkg.cond.	Psychological	Trng. time nec.	Occur. in civ. Emplmt	Traditional	Now Employed	Appar Suitable	Partially suit	Over 50%	10% to 50%	Under 10%	
774	Chief Radar Operator, Designated Set	x								Not	listed		No	info		—
775	Radar Repairman	x								Not	listed		No	info		—
776	Radio Operator, Low Speed	x									x				x	1
777	Radio Operator, Fixed Station	x									x				x	1
778	Radio Mechanic AACS	x								Not	parallel				x	—
779	Weather Cryptographer	x								Not	listed				x	—
780	Weather Station Chief	x								Not	listed				x	—
781	Water Tender		x		x					Not	listed				x	—
784	Weather Observer	x								Not	listed				x	—
785	Forage Inspector	x								Not	listed				x	—
786	Toxic Gas Handler		x		x					Not	listed				x	—
787	Weather Forecaster	x								Not	listed				x	—
788	Theodolite Observer		x		x					Not	listed		No	info		3
789	Meteorological Plotter	x								Not	listed				x	1
790	Weather Observer-Teletypewriter Technician	x								Not	listed				x	—
795	Tank Commander		x		x					Not	listed		No	info		—
800	Camoufleur		x		x					Not	listed		No	info		3
802	Artillery Mechanic, Minor Maintenance		x		x					Not	parallel				x	—
803	Bugler	x								Not	listed			x		3
804	Camouflage Technician		x		x					Not	listed		No	info		—
806	Code Clerk	x								Not	listed			x		3
807	Cryptographer (Code Compiler)	x								Not	listed				x	—
808	Cryptanalyst	x								Not	listed				x	—
809	Decontaminating Equipment Operator	x								Not	listed				x	—
811	Antitank Noncommissioned Officer		x		x					Not	listed		No	info		—
812	Heavy Weapons Noncommissioned Officer		x		x					Not	listed		No	info		—
813	Motor Transportation Noncommissioned Officer		x		x					Not	listed		No	info		—
814	Operations Noncommissioned Officer		x		x					Not	listed		No	info		—
815	Ordnance Noncommissioned Officer		x		x					Not	listed		No	info		—
816	Personnel Noncommissioned Officer	x								Not	listed		No	info		—
817	Pontoneer		x		x					Not	listed		No	info		—
818	Railway Transportation Noncommissioned Officer	x								Not	listed		No	info		—
819	Commissary Steward	x								Not	listed		No	info		—
820	Subsistence Noncommissioned Officer		x		x					Not	listed		No	info		—
821	Supply Noncommissioned Officer	x								Not	listed		No	info		—
822	Utilities Noncommissioned Officer	x								Not	listed		No	info		—

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						W.S.E.S. Survey			Emplmt in U.S.			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ. & wkg. cond.	Psychological	Trng. time nec.	Occur. in civ. Emplmt.	Traditional	Now Employed	Appar. Suitable	Partially suit	Over 50%	10% to 50%	Under 10%	
824	Mess Sergeant	x								Not	listed		No	info		3
825	Medical Supply Noncommissioned Officer	x								Not	listed		No	info		--
826	Army Air Forces Technical Supply Noncommissioned Officer	x								Not	listed		No	info		--
835	Supply Clerk	x								Not	parallel			x		1,3
846	Portable Power Generator Operator	x								Not	listed				x	--
855	Dental Technician	x								x				x		1,3
857	Flight Surgeon's Assistant	x								Not	listed		No	info		1
858	Medical Laboratory Technician	x								x				x		1,3
859	Pharmacy Technician	x								Not	parallel			x		1,3
861	Surgical Technician	x								Not	listed			x		1,3
865	Veterinary Pharmacy Technician	x								Not	listed			x		--
870	Chemical Noncommissioned Officer	x								Not	listed		No	info		--
871	Messenger, Mounted		x		x					Not	listed		No	info		--
872	Radar Technician	x								Not	listed		No	info		--
874	Chief Teletypewriter Operator	x								Not	listed		x			--
875	Telephone Communication Instructor	x								Not	listed		x			--
876	Line Construction and Maintenance Engineer		x	x	x					Not	listed		No	info		--
877	Message Center Procedure Instructor	x								Not	listed		x			--
878	Field Radio Communication Instructor		x		x					Not	listed		No	info		--
879	Teletypewriter Installer And Maintenance Instructor	x								Not	listed		No	info		--
880	Teletypewriter Communication Instructor	x								Not	listed		x			--
881	Ground Radio Repair Instructor	x								Not	listed		x			--
882	Turret Supervisor, Aircraft Warning	x								Not	listed		No	info		--
883	Radio Observer I		x		x					Not	listed		No	info		--
884	Radio Observer V		x		x					Not	listed		No	info		--
885	Radio Observer M		x		x					Not	listed		No	info		--
886	Radio Mechanic I		x		x					Not	listed		No	info		--
887	Radio Mechanic V		x		x					Not	listed		No	info		--
888	Radio Mechanic F		x		x					Not	listed		No	info		--
889	Radio Mechanic M		x		x					Not	listed		No	info		--
890	Photo Interpreter	x								Not	listed			x		--
900	Munitions Worker, Ground	x								Not	listed				x	--
901	Munitions Worker, Aviation	x								Not	listed				x	--
902	Weapons Mechanic, Aircraft	x								Not	listed				x	--

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						U.S.E.S. Survey			Emplmt in U S			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ.& wkg.cond.	Psychological	Trng time nec.	Occur. in civ. Emplmt.	Traditional	Now Employed	Appar Suitable	Partially suit	Over 50%	10% to 50%	Under 10%	
903	Weapons Mechanic, Hand and Shoulder	x								Not listed					x	—
904	Machine Gun Mechanic	x								Not listed					x	—
905	Engine Mechanic, Wheeled Vehicle and Half-Track	x								Not parallel					x	—
906	Mechanic, Automotive Chassis	x								Not parallel					x	—
907	Mechanic, Automotive Auxiliaries	x								Not parallel					x	—
908	Tank Mechanic, Suspension or Power Train	x								Not listed					x	—
909	Mechanic, Automotive Engine	x								Not parallel					x	—
910	Tank Engine Mechanic, Diesel	x								Not parallel					x	—
911	Airplane Armorer	x								Not parallel					x	3
912	Tank and Automotive Electrician	x								Not parallel					x	—
913	Artillery Mechanic, Light	x								Not parallel					x	—
914	Artillery Mechanic, Heavy	x								Not parallel					x	—
915	Artillery Mechanic, Antiaircraft	x								Not parallel					x	—
916	Artillery Mechanic, Seacoast	x								Not parallel					x	—
917	Director Repairman, Heavy Antiaircraft Artillery	x								Not listed					x	—
918	Director Repairman, Light Antiaircraft Artillery	x								Not listed					x	—
919	Control System Repairman, Heavy Antiaircraft Artillery	x								Not listed					x	—
920	Control System Repairman, Light Antiaircraft Artillery	x								Not listed					x	—
921	Height Finder Repairman	x								Not listed					x	—
922	Instrument Repairman, Fire Control	x								Not parallel					x	1,3
923	Welder, Armor Plate	x								Not parallel					x	3
924	Bomb Salvage Technician		x		x					Not listed					x	—
925	Mobile Repair Unit Chief		x		x					Not listed			No info			—
926	Mechanic, Fuel Induction	x								Not parallel					x	—
928	Automotive Equipment Mechanic	x								Not parallel					x	3
929	Automotive Equipment Operator	x								Not listed					x	—
930	Chief Automotive Equipment Mechanic	x								Not listed					x	—
931	Heavy Automotive Equipment Operator		x	x						Not listed					x	—
932	Refueling Unit Operator	x								Not listed					x	—
935	Recruiting Substation Commander		x		x	x				Not listed			No info			—

Suitability of Military Occupations, Continued

Army SS. No.	Job Title	Recommendation		If unsuitable, by reason of factors checked						U.S.E.S. Survey			Emplmt. in U.S			Employed in England
		Suitable	Not Suit	Phys. strgth. reqd.	Army environ. & wkg. cond.	Psychological	Trng. time nec.	Occur. in civ. Emplmt.	Appar. Suitable	Now Employed	Appar. Suitable	Partially suit	Over 50%	10% to 50%	Under 10%	
936	Canvasser, Recruiting Unit		x		x	x				Not listed			No info			—
937	Rifle Marksmanship Instructor	x								Not listed			x			—
938	Gunnery Instructor		x		x		x			Not listed			No info			—
940	Army Aerial Photographer		x		x					Not listed			No info			—
941	Camera Technician	x								Not listed					x	1
942	Radio Sonde Operator	x								Not listed			No info			—
943	Photographic Chief	x								Not listed				x		—
944	Photographic Laboratory Chief	x								Not listed				x		—
945	Photographic Laboratory Technician	x								Not listed				x		3
946	Searchlight Control Chief	x								Not listed					x	—
947	Signal Communication Instructor	x								Not listed			x			—

This page replaces Page 16-c, dated April 27, 1942

AMERICAN RED CROSS WORKERS -- WOMEN
OPPORTUNITIES FOR SERVICE IN MILITARY HOSPITALS

Medical and Psychiatric Social Workers

Domestic - Field Directors -	Age: 30 to 50	Salary: $175 to $250 a month plus quarters or allowance in lieu of quarters
Domestic - Staff Case Workers -	Age: 25 to 45	Salary: $160 to $225 a month plus quarters or allowance in lieu of quarters
Foreign - Asst. Field Directors -	Age: 30 to 45	Salary: $225 a month plus $50 maintenance

These positions are in Army General and Naval Hospitals. The field director and assistant field director have responsibility for supervising case work service to patients and hospital personnel; for supervision of recreation for convalescent patients; for selection, training and supervision of volunteers; and for the interests of visiting relatives who may need assistance. The social case workers conduct work service to patients and hospital personnel. There are a limited number of opportunities for psychiatric social workers in psychiatric units of Naval and Marine Corps Training Stations and Mental Hygiene Units of the Army. In these positions the worker serves as assistant field director.

Requirements: Graduation from an accredited school of social work specializing in medical or psychiatric social work; from two to five years of case work experience in a recognized case work agency, one year of which must have been in an in-patient or out-patient service of a hospital or a satisfactory equivalent combination. Field directors must have had at least one year's experience in a supervisory or administrative capacity. Must be U.S. citizen.

Hospital Recreation Workers

Domestic -	Age: 25 to 50	Salary: $135 to $200 a month plus quarters or allowance in lieu of quarters
Foreign -	Age: 25 to 45	Salary: $175 a month plus $50 a month maintenance

Women chosen for these positions plan and conduct medically-approved programs of recreation for convalescent patients in Army and Navy hospitals. Candidates must have the ability to organize and conduct a varied program for individual patients in the wards. They should also be capable of organizing parties, entertainments, dramatics, music and games in hospital recreation rooms. They must have the ability to interest volunteers in the programs and be capable of supervising them.

Requirements: Graduation from an accredited college plus one year's experience in recreation. Applicants must be excellent in two or more of the recreation skills associated with hospital recreation program. Two years of academic training plus three years of successful experience in recreation or allied fields may be accepted as the equivalent of a complete college course. Must be U.S. citizen.

How to Apply: Communicate with the nearest Red Cross Area Personnel Office as follows: (1) North Atlantic Area, 300 Fourth Ave., New York, N.Y., (2) Eastern Area, 615 N. St. Asaph St., Alexandria, Va., (3) Midwestern Area, 1709 Washington Ave., St. Louis, Mo., (4) Pacific Area, Civic Auditorium, San Francisco, Calif. Those interested in foreign service should communicate directly with Employment Service, National Headquarters, American Red Cross, Washington, D.C.

This page replaces Page 25, dated August 31, 1942

WOMEN'S RESERVES OF THE U.S. NAVY — WAVES AND SPARS
REGULAR ENLISTMENT

The requirements for officer candidates in the WAVES, the women's reserve of the United States Navy, and the SPARS, the women's reserve of the United States Coast Guard, are described on Page 24 of WAR SERVICE OPPORTUNITIES. Details concerning enlistment in the grade comparable to that of enlisted men in the Navy or Coast Guard are presented below. Women in these services will perform clerical tasks and a great variety of other work previously performed by men in these branches of the armed forces, and the men will thus be released for field or sea duty.

Requirements for Enlistment	Age: Applicants must be between 20 and 36 years of age. Examinations: Physical: General good health. Minimum height, five feet; minimum weight, 95 pounds. Applicants must be able to pass a physical examination. Aptitude: A verbal and mathematical aptitude test is administered to enlistees. Education: Four-year high school; or business school plus practical experience equivalent to a high-school education Other: Female citizen of the United States. Applicants may be unmarried or married, but no married woman with children below the age of 18 years will be considered. Wives of men in the Navy are not eligible for service in the WAVES, and wives of men in the Coast Guard are not eligible for service in the SPARS.
Places of Service	Members of the WAVES and SPARS serve in shore establishments within the continental United States only
Pay	Pay is the same as for enlisted men in the same ratings, beginning as apprentice seaman at $50 a month. Pay for yoemen, radiomen, and other petty officer ratings ranges from $78 to $126 a month.
Where to Apply	Prospective applicants should write or, if convenient, visit the nearest Office of Naval Officer Procurement (such offices are located in 33 principal cities; a list of these cities may be found on Page 29)

This page replaces Page 24, dated August 31, 1942

WOMEN'S RESERVES OF THE U.S. NAVY -- WAVES AND SPARS
OFFICERS' TRAINING

There are women's reserves in both the United States Navy and the United States Coast Guard -- in the Navy, the WAVES (Women Accepted for Volunteer Emergency Service); in the Coast Guard, the SPARS (the name taken from the motto of the Coast Guard "semper paratus" -- always ready). The reserves are a part of the Navy and Coast Guard respectively, and members are assigned Navy or Coast Guard ranks and ratings, with the pertinent pay and perquisites. They are under military discipline and uniformed, but will be assigned to duty only at shore establishments within the continental United States, to perform a variety of duties previously performed by officers and enlisted men who will thus be made available for sea duty. This page relates to the appointment and training of officer candidates and probationary officers in the WAVES and in the SPARS.

Requirements for Officer Candidates	Age: Between 20th and 50th birthdays Examinations: Physical: General good health and absence of major physical defects. Minimum height, 60 inches; minimum weight, 95 pounds; no maximum, but proportions must be good Aptitude: A verbal and mathematical aptitude test Education: Baccalaureate degree from a recognized college, or in lieu thereof, 2 years of college credits toward a degree plus at least 2 years of business or professional experience Other: Citizen of the United States. Unmarried, or married with no children under 18 years of age. Wives of men in the Coast Guard are not eligible for the SPARS, and wives of men in the Navy are not eligible for the WAVES.
Training	Two to three months -- in every case including one month of basic indoctrination in the rating of apprentice seaman. Upon successful completion of courses, recommended candidates will be commissioned in appropriate rank.
Pay	Same as for men in equal ratings or ranks: As apprentice seaman, $50 a month; as midshipman, $65 a month; as ensign, base pay of $150 a month (for additional allowances of officers, see page 1-k). Newly commissioned officers receive an initial uniform allowance of $250.
Period of Service	Duration of war plus six months
Where to Apply	All applicants must write to the nearest Office of Naval Officer Procurement (such offices are located in 33 principal cities) to ask for preliminary application forms. First letter should state age, education, and any other qualifications the prospective applicant thinks pertinent.

This page replaces Page 22, dated June 1, 1942

WOMEN'S ARMY AUXILIARY CORPS

The Women's Army Auxiliary Corps is a corps of women in military uniform and under military discipline, organized by act of Congress for non-combatant service with the Army. Units of the corps may be stationed with units of the Army in the United States or abroad. No separate program for officer procurement has been established in the WAAC, all officer candidates now being selected from the ranks of those completing basic military training.

Requirements for Enlistment

Age: Between 21st and 45th birthdays

Examinations: Physical: Examination by Army doctor. Applicants must be physically fit, not less than 5 ft. nor more than 6 ft. in height, not less than 100 pounds in weight. Variation from average for age and height should not exceed approximately 16 per cent.
Mental: A Mental Alertness Test -- similar to the tests used in the Army of the United States

Education: No specific requirements of formal education

Other: Applicant must be a woman citizen of the United States. Unmarried or married, but mothers of young children are not accepted.

Training

Four weeks of basic military training at a WAAC training center. Those completing basic training become eligible for entrance into one of several specialist schools and are also eligible for promotion to ranks corresponding to non-commissioned officer ranks in the Army.

Officers Training

Every member of the WAAC has an opportunity to be selected for Officers' Training School. Applicants must have a satisfactory score on the Mental Alertness Test, are accepted on the basis of all-around performance and ability. Officer training is for eight weeks, and successful candidates are commissioned Third Officers.

Pay and Ranks

RANK	PAY	RANK	PAY
Auxiliary	$ 50.00	Third Officer	$150.00
Aux. (1st Cl.)	54.00	Second Officer	166.67
Jr. Leader	66.00	First Officer	200.00
Leader	78.00	Field Director	250.00
Staff Leader	96.00	Asst. Director	291.67
Tech. Leader	114.00	Director	333.33
1st Leader	138.00		

Members of the corps receive subsistence and quarters or an allowance in lieu thereof. Uniforms are provided. Members of the corps are entitled to medical services, benefits under the U.S. Employees' Compensation Act, and all benefits provided by the Soldiers' and Sailors' Civil Relief Act of 1940. They are eligible for thirty days' leave each year.

Comment

Enlistment is for the duration of the war plus six months. Application should be made to the nearest Army recruiting station, not to the War Department in Washington.

This page replaces Page 19, dated March 10, 1942

THE ARMY NURSE CORPS and THE NAVY NURSE CORPS

Qualified nurses may enter the Army Nurse Corps as Regular Army Nurses or as Reserve Nurses assigned to active service. Navy nurses are appointed in the Navy Nurse Corps or in the Naval Reserve Nurse Corps

	Army Nurses	Navy Nurses
Requirements for Appointment	Age: Regular Army Nurse 22-30 Reserve Nurse 21-40	Navy Nurse Corps 22-28; Naval Reserve Nurse Corps 21-40
	Examinations: Physical- Fitness determined by Army medical officers	Fitness determined by Navy Medical officers
	Education: Graduate of a 4-year high school and of an approved 3-year school of nursing. Must be a Registered Nurse	Graduate of an accredited high school and of an accredited school of nursing. Must be a Registered Nurse
	Other: Female citizen of U.S. Unmarried (may be widowed or divorced). Marriage while in service will not cause discharge	Female citizen of U.S. Unmarried (may be widowed or legally separated). Marriage while in service will cause discharge
Pay	Nurses are appointed with relative rank of second lieutenant. When on active duty they receive maintenance, in addition to pay of $1,080 a year during first 3 years of service; $1,260 during second 3 years; $1,440 during third 3 years; $1,560 during fourth 3 years; $1,800 after 12 years	Nurses are appointed with relative rank of ensign. When on active duty they receive maintenance, in addition to pay of $1,080 a year during first 3 years of service; $1,260 during second 3 years; $1,440 during third 3 years; $1,620 during fourth 3 years; $1,800 after 12 years
Comment	Nurses who are enrolled in the American Red Cross Nursing Service and who desire appointment as Reserve Nurses in the Army or as Naval Reserve Nurses are directed to state their preference in writing direct to the Red Cross. Their names will then be submitted to the Superintendent of the Army Nurse Corps or to the Superintendent of the Navy Nurse Corps, as the case may be	
Sources of Fuller Information	There is immediate need for increased nursing personnel in both the Army and the Navy. The foregoing data do not afford a complete and detailed comparison of the two services. Requests for information should be sent to	
	Superintendent of the Army Nurse Corps, Office of the Surgeon General of the Army, War Department, Washington, D.C.	Superintendent of the Navy Nurse Corps, Bureau of Medicine and Surgery, Navy Department, Washington, D.C.

AMERICAN RED CROSS -- OVERSEAS CLUB PERSONNEL
MEN AND WOMEN

Clubs designed to meet the leisure-time needs of men in the armed forces while on leave are being established and operated in leave areas overseas. Each club will provide recreational facilities for several thousand men. They will also furnish feeding and lodging facilities for several hundred. For their staffs, the following types of personnel are being recruited in the United States

Club Director (Men) - Age: 35 to 50. Salary: $275 a month plus maintenance
At least 5 years of successful executive or administrative experience. Ability to manage an organization and conduct its external relations

Assistant Club Director (Women) - 35 to 45. $225 a month plus maintenance
Experience in operating large community centers or camps is desirable

Program Director (Men) - 30 to 50. Salary: $250 a month plus maintenance
At least 3 years of full-time experience in leisure-time programs in public or private agencies. Skill in recreational leadership and organization

Assistant Program Director (Women) - 25 to 40. $200 month plus maintenance
Qualifications similar to those of program director. Ability to supervise staff assistants

Recreation Staff Assistants (Women) - 25 to 35. $150 month plus maintenance
Excellent in one or more recreational skills

Personal Service Director (Women) - 30 to 45. $225 month plus maintenance
Should be graduate of an accredited school of social work, with at least 3 years' social work experience. In exceptional cases longer experience may be substituted for required education. Ability to counsel and advise men on personal and family problems

General Requirements	Must be citizen of U. S., in good health. Graduation from an accredited college or university is desired
Relation to Selective Service	Men of Selective Service age can not be considered unless they have dependents or are eligible for deferment for other valid and substantial reasons. Occupational deferments are not acceptable
Where to Apply	Write directly to Personnel Service, National Headquarters, American Red Cross, Washington, D. C.

SCIENTIFIC RESEARCH WORKERS -- NAVAL ORDNANCE LABORATORY AND NAVAL RESEARCH LABORATORY

The Naval Ordnance Laboratory expects to employ during the current fiscal year ending June 30, 1943, more than 100 new scientific workers. Employment is under contracts which terminate on June 30 of each year, but it is anticipated that contracts will be regularly renewed. The Naval Research Laboratory expects to employ more than 200 new scientific research workers. In both laboratories qualified women are being employed.

Naval Ordnance Laboratory

Qualifications Required	Thorough technical training, chiefly in physics and electrical engineering (especially electronics, but not particularly radio), and many in mechanical engineering and drafting. Persons with graduate training and teaching experience in these fields are desired, but there are also openings for recent college graduates and a few for persons with less than 4 years of college training who have had additional practical experience
Pay	The range is $2,000 to $7,500 a year
Relation to Selective Service	Because of the high priority of the work, and the vital need for able technical personnel at the Laboratory, the Laboratory is able to request deferment with reasonable assurance that it will be granted. Some employees in junior grades may have opportunity to apply for commissions in the Naval Reserve
Where to Apply	Write directly to Personnel Section, Naval Ordnance Laboratory, Navy Yard, Washington, D.C.

Naval Research Laboratory

Qualifications Required	Emphasis is on research aptitude and research experience, in radio and other fields indicated below. The radio subdivisions are:

Transmitter	Electronics	Direction Finder
Receiver	Centimeter wave	Communication security
Aircraft	Ship and shore radar	Special development

There are also some openings for persons qualified in:

Metallurgy	Mechanics and	Physical optics
Chemistry	Electricity	Design and drafting

Pay	The range is $2,000 to $4,800 a year
Relation to Selective Service	Due to the great importance of the research work, deferment of male employees of Selective Service age is highly probable. Some may be commissoned and continued on inactive status.
Where to Apply	Write directly to Personnel Procurement, Naval Research Laboratory, Anacostia, Washington, D.C.

CIVIL SERVICE — JUNIOR CHEMIST
War Service Appointments

This is an example of a type of work for which the war has created needs in excess of the numbers of eligibles produced by the regular assembled examinations (described on page 15-a) and consequently an open unassembled examination has been announced. Appointments will be known as War Service Appointments, in no case to extend beyond six months after the termination of the war

Particular attention is called to the fact that war demands for technically trained persons have created unusual opportunities for women chemists. Navy yards, arsenals, and other governmental laboratories throughout the United States are employing women in chemical work

Requirements for Eligibility

Age: No age limit

Examinations: Physical- Necessary only to demonstrate capacity to perform the duties, and freedom from defects which would constitute occupational hazards

Other- No written test. Applicants are rated on experience, education, and training

Education: Full 4-year course leading to bachelor's degree, including or supplemented by at least 30 semester hours' study in chemistry. Senior students, otherwise qualified, who show that they expect to complete the required college course within 4 months of the date of their applications, are eligible for provisional appointment prior to their graduation

Pay

$2,000 a year

Source of Detailed Information

United States Civil Service Commission Announcement No. 219 (Unassembled), issued April 6, 1942. Application forms are obtainable at any first-class or second-class postoffice, except in 15 district headquarters cities, where they must be obtained from the United States Civil Service District offices. They may also be obtained from the United States Civil Service Commission, Washington, D. C.

CIVIL SERVICE -- STUDENT PHYSIOTHERAPY AIDE (Open to Women)
APPRENTICE PHYSIOTHERAPY AIDE (Men and Women)

Not more than 15 female students are to be enrolled quarterly as Student Physiotherapy Aide at Army Medical Center, Washington, D.C.; the number of appointments to position of Apprentice Physiotherapy Aide will be determined by needs of Army Hospitals in United States

Training	Condensed 6-months' course at Army Medical Center for Student Physiotherapy Aides. Those successfully completing this course will be assigned to duty as Apprentice Physiotherapy Aides in any Army Hospital for a 6-months' course; upon successful completion of which they will be granted certificates of graduation, and upon passing any prescribed promotional test of fitness will be eligible for retention in the service in position of Physiotherapy Aide at $1800 a year
Requirements of Eligibility	Age: 20-44 inclusive, on date of receipt of application Examinations: Physical - Rigid physical examination will be made by a Federal medical officer, or other duly licensed doctor of medicine, before appointment. (Height must be not less than 62"; weight not less than 110 lbs. when clad in surgical sheet or gown; at least 20/100 Snellen each eye, corrected to at least 20/20 in one and at least 20/30 in other) Civil Service- Open competitive examinations. Competitors will not be required to report for examination at any place, but will be rated on the extent of their education, extent and quality of experience, and on fitness, on a scale of 100 Education: STUDENT PHYSIOTHERAPY AIDE - must have completed full 4-year course leading to bachelor's degree in an accredited school of physical education, or other recognized university or college with major study in physical education. Courses taken must have included human anatomy, human physiology, human kinesiology. Applications will be accepted from senior students of institutions of recognized standing, if otherwise qualified, who show that they expect to complete the required college course within 9 months of date of application APPRENTICE PHYSIOTHERAPY AIDE - must have completed or must now be in course of completing full special condensed course leading to graduation from a school of physiotherapy meeting standards established for duration of emergency by the American Medical Association
Pay	Student Physiotherapy Aide, $420 a year (less deduction of $360 a year for subsistence and quarters); Apprentice Physiotherapy Aide, $1440 a year
Sources of Fuller Information	U.S. Civil Service Announcement No. 117 (Unassembled) and Amendment to Announcement No. 117 (Unassembled) of 1941

CIVIL SERVICE -- TECHNICAL AND SCIENTIFIC AIDE

There are four grades in this category, with salaries graduated from $1440 to $2000 a year. Of immediate interest is the fact that the War Department needs approximately 1000 young women laboratory aides, at the rate of about 100 per month during the next 10 months. They will be secured from among applicants who have completed two years of college study, including two laboratory courses in physics or chemistry and a course in trigonometry. The examination most closely approximating these specifications is that for Assistant Technical and Scientific Aide. Accordingly the examination announcement for that grade is digested herein. Qualifications for other grades are detailed in the same announcement

Requirements for Eligibility

Age: Under 53. Open to men and women

Examinations: Physical- Due to the emergency, persons not fully meeting all physical requirements may be certified for temporary duty for the duration in the absence of qualified eligibles

Civil Service- Open competitive. Competitors will not be required to report for examination at any place, but will be rated on extent of education, extent and quality of experience related to the duties of the position applied for, and general fitness, on a scale of 100

Experience: Two years of responsible, paid technical or scientific work of high quality, for which, however, education at a recognized college or university may be substituted, year for year

Education: There are six options. The specific training required under each option is as follows:

Radio - 6 semester hours (or a 6 months' course at a recognized radio school)
Explosives - 8 semester hours in organic chemistry
Chemistry -24 semester hours
Physics - 16 semester hours
Metallurgy- 14 semester hours in strictly metallurgical subjects
Fuels - 10 semester hours in coal, gas, petroleum, wood, etc.

Pay

As Assistant Technical and Scientific Aide, $1620 a year

Sources of Fuller Information

U.S. Civil Service Examination Announcement No. 133 (Unassembled)
U.S. Civil Service Commission Press Release I-42, January 29,1942

Comment

It is believed that the need for women to do chemical and physical testing and analysis and related work in laboratories will continue, and the Civil Service Commission expects additional requests for women to fill positions as laboratory aides and technicians at the Bureau of Mines, Bureau of Standards, and the Department of Agriculture, as well as at Army and Navy arsenals

U.S. MARINES CORPS WOMEN'S RESERVE
OFFICERS' TRAINING

The U.S. Marine Corps Women's Reserve is now enrolling women as officers and enlisted personnel. The Reserves are a part of the Marine Corps and are assigned Marine ranks and ratings, with the appropriate pay and perquisites. They are under military discipline and uniformed, and will be trained in schools already established for Navy WAVES at major women's colleges throughout the country. Later, they will be assigned to Marine Corps training centers, posts, and stations, replacing men fitted for active service with fighting units. By law the Women Reserves will serve only within the continental United States. Principal Marine Headquarters and posts to which women will be assigned are located at Washington, San Diego, Calif., Philadelphia, Chicago, Atlanta, Quantico, Va., New River, N.C., and Parris Island, S.C.

Requirements for Officer Candidates	Age: Between 20th and 50th birthdays Examinations: Physical: Sound physical condition. Height at least 5 feet, and weight at least 95 pounds. Education: College degree or 2 years of college work, plus at least 2 years of acceptable business or professional experience. Other: Citizen of the United States. Unmarried, or married with no children under 18 years of age. Wives of officers or enlisted men in the Marines are not eligible.
Training	From 2 to 6 months, depending on the type of work to be done. In every case including one month of basic indoctrination in the rating of a private. Upon successful completion of courses, recommended candidates will be commissioned in appropriate rank.
Pay	Same as for men in equal ratings or ranks: As private, $50 a month; as cadet, $75 a month; as 2nd Lieutenant, base pay of $150 a month, and so on. Newly commissioned officers receive an initial uniform allowance of $250.
Period of Service	Duration of war plus six months
Where to Apply	Applicants should write to the nearest Office of Naval and Marine Corps Officer Procurement (see page 29) and ask for a Marine Corps Women's Reserve application blank. Or, if there is an office close by, applicants may call in person.

QUESTIONS AND ANSWERS

The success of this page will depend in large part upon the questions raised by the institutional representatives who are working directly with students. All types of questions will be welcomed and the most pertinent will be used. Answers will not be available for all queries, yet an attempt will be made in each instance to secure the latest possible information.

1. Q. May students who have signed up as pilots in the Army Air Forces Reserve request transfer to meteorology if they are qualified?
A. Yes. The request is made by writing to the Air Liasion Officer of the Service Command.

2. Q. Will there be another class in Meteorology Program C of the Army Air Forces?
A. Yes. It is scheduled for about May 17, 1943.

3. Q. Are linguists needed in the Women's Army Auxiliary Corps?
A. Yes. Languages particularly needed are Spanish, Portuguese, Chinese, Japanese, Russian, French, German, and Italian. WAAC's who are qualified will be used for cryptography, communications, interpreting and related duties.

4. Q. May students in the Armv Enlisted Reserve Corps, unassigned, transfer to the Army Air Forces Reserve, if qualified?
A. Yes. The student should write to the Air Liasion Officer of the Service Command, requesting such a transfer. He may then be authorized to appear before an Aviation Cadet Board for his mental and physical examination.

5. Q. How may V-7 reservists who are graduating soon expedite their call to a Naval Reserve Midshipmen's School?
A. The V-7 graduate should forward his transcript to the Bureau of Naval Personnel, Arlington Annex, Arlington, Va., along with a letter requesting immediate active duty.

6. Q. What information is available about the Women's Marine Corps Reserve?
A. The qualifications and opportunities in the Women's Marine Corps Reserve will parallel closely those for the Waves. Applications will be accepted at all offices of Officer Procurement (see page 29) starting Feb. 15. Detailed information will be released by the Marine Corps on Feb. 13.

7. Q. What are the general qualifications for the Army's Specialized Training Program?
A. Applicants for the basic specialized training must meet 3 requirements: (1) a score of 110 or better on the Army General Classification Test. (2) Graduation from an accredited high school and must be between the ages of 18 and 21 inclusive. (3) Must have completed or must be in the process of completing the regular basic training of the Army. To qualify for advanced training the applicant must have in addition to the above qualifications at least one year of college work in a recognized college or university (or equivalent training), and must be 18 years of age or over but not necessarily under 22.

8. Q. How may the ERC students who are earmarked for the Navy, Marine Corps, or Coast Guard learn if they are qualified for transfer?
A. Before the ERC's report for active duty, the men who signed the preference form for another service will be authorized to take the necessary examinations. It is expected that Joint Recruiting Boards will be sent to all colleges except those with only a few reservists. In the latter cases, the individuals may be authorized to go to the nearest Recruiting Stations.

MILITARY SERVICE (WOMEN) - 1943

WAR SERVICE OPPORTUNITIES

FOR COLLEGE AND UNIVERSITY STUDENTS

A cumulative circular
from the American Council on Education
744 Jackson Place, Washington, D. C.

February 4, 1943

This page replaces the title page dated July 6, 1942

To the Recipient:

Through an extension of the grant to the American Council on Education, WAR SERVICE OPPORTUNITIES will continue publication until July 1, 1943. As in the past year of its publication, its content will be, to a large extent, determined by developments in government and industry that effect higher education.

It is already apparent that some shift of emphasis is desirable. For the most part, the materials have been devoted almost exclusively to a description of individual opportunities for college students. It will continue to describe such opportunities in the armed forces, in industry, and in government as they develop. With the establishment of the Army Specialized and the Navy Collegiate Training Programs, such opportunities in the military have become standardized thus, to a large extent, eliminating the varying types of opportunities available to students during the early months of the war. On the other hand, opportunities of individual colleges and universities to render significant service are still in the formative stage and it will be the aim of this publication to describe such opportunities during these months of rapid transition.

The bulletin, HIGHER EDUCATION AND NATIONAL DEFENSE, will continue to describe basic educational policies that affect higher education. WAR SERVICE OPPORTUNITIES will describe administrative policies in the carrying out of such policies and specialized programs developed by colleges and universities. Both publications will continue to be under the general direction of Francis J. Brown.

The Council has been extremely fortunate in procuring the services of Willard W. Blaesser who is on leave of absence from his position as Assistant Dean of Men and Executive Secretary of the Personnel Council at the University of Wisconsin. Mr. Blaesser combines a knowledge of the problem of the individual students and of the institutions with close contact with the varying forces that affect higher education.

Like his predecessor, Mr. Blaesser will appreciate your comments and suggestions regarding the content of WAR SERVICE OPPORTUNITIES.

Sincerely yours.

George F. Zook

George F. Zook
President

This page replaces Page 1-a, dated March 10, 1943

To the Recipient:

The cumulative system of War Service Opportunities has grown complicated, and this installment will not ease the situation. After the Army and the Navy release full details on their new college programs and when the complete procedures at Induction Centers are determined, we will then be able to develop a revised system of paging and cumulating. Meanwhile, as a preliminary step, please remove the following pages from your W.S.O. folder: 1-a, 1-b, 1-c, 1-d, 1-e, 1-g, 1-h, 1-i, 2-c, 3-a, 4, 5, 6, 8-a, 9, 10, 11, 12, and 21. It may be advisable to keep these pages in a separate folder for historical reference. This installment includes a question and answer page which we hope will bring about a "give and take" between the various institutions and this office. Also included are the new title page, replacement of the Selective Service page, and the revised price list. The information which follows on this page and 1-b and 1-c is a brief summary of the current status of the enlisted reserve programs, the joint induction procedures of the armed services, and the voluntary enlistments still possible.

College Enlisted Reserve Programs The full War Department release calling to active duty the unassigned group of the Enlisted Reserve Corps was attached to Emergency Supplement No.7 of the bulletin Higher Education and National Defense. In case the counseling official to whom you direct War Service Opportunities does not also have Higher Education and National Defense referred to him, please write to Francis J. Brown, American Council on Education, and request that his name be added to the mailing list. The individual calls to active duty will be issued through the nine Service Commands and sent to the college addresses of the students. There will be approximately 14 days between receipt by the student of his call to active duty and the date on which he must report to the designated Reception Center. In most instances the student will be ordered to the Reception Center which is nearest his college or university. Transportation expenses from the college to the Reception Center will be paid by the Army. There will be opportunity at the Reception Center to qualify, within established quotas, for Aviation Cadet training in addition to other training within the Army. The Army Specialized Training Program will of course be open, within established quotas, to those who can qualify after the completion of the period of basic training.

In addition to their transcripts, ERC reservists (like all students entering service) should have with them the Qualification Summary recommended by the American Council on Education in Bulletin No.24. The War Department may soon request from colleges and universities personal information about the aptitudes and leadership qualities of each of their students for use at the time of classification and assignment. Although a different form and revised procedures may be suggested by the American Council if the above step is taken, the present Qualification Summary, or an adaptation of it should be used during the interim.

Army Air Force Enlisted Reservists who have qualified for Aviation Cadet Training will be called to active service between now and April 1, 1943. A large contingent will be requested to report between February 15 and 20. College students will be permitted to complete the quarter or semester in which they were enrolled on Dec. 31, 1942. They will be sent to seven Basic Training Centers under the Army Air Forces Technical Training Command. After completing the basic training period of from one to two months some will go directly to the

This page replaces page 2, dated Oct. 26, 1942; to be inserted after Title Page, dated Feb. 4, 1943.

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This page replaces Page 1-b, dated August 3, 1942

the Flying Training Command Classification Centers to be classified for immediate flying training. The balance will be sent to attend designated colleges and universities for a special training course prior to their entering flying training. The selection will be made on the basis of an educational test and an evaluation of their total educational background. The training course for most of the men will approximate five months. Some will have a shorter period, depending upon their educational level and the needs of the Flying Training Command.

The five month training course will consist of basic and elementary training in five subject matter fields. There will be sixty hours each of English, Geography, Mathematics, History, and 180 hours of Physics. Ten hours of flight instruction will be given under the Civilian Pilot Training Program. A limited number of hours will be given to military drill and physical fitness. Although not required, it has been learned from Army Air Forces officials that transcripts and qualification summaries will assist in the classification and assignment of the reservists now being called.

For convenient reference the Navy "call" table for V-1 and V-7 reservists, originally announced in the detailed release of December 12, is reproduced below:

Equivalent Semesters Completed as of July 1, 1943	Additional Equivalent Semesters allowed for Completion of College Training
7	1
6	2
5	2
4	3
3	4
2	4
1	5

It is not expected that these men will be called to active duty and assigned to selected colleges and universities for additional training before July 1, 1943. The qualifying examinations for V-1 reservists will be given this spring and the exact date will be announced shortly. All of the "V" plans, the Marine Corps Reserve and the Coast Guard, will be absorbed into the Navy College Training Program after July 1, 1943.

Joint Induction Procedures Under Selective Service Since Feb. 1, qualified registrants between 18 and 38 are being sent to Armed Forces Induction Centers where it is the responsibility of the Army and Navy Personnel to examine physically and to assign the individual registrant to the particular service for which he appears to be best qualified. Registrants are being asked to express their preference for the Army, Navy, Marine Corps, or Coast Guard, and that preference is being given the fullest consideration practicable. If the quota is filled in the preferred service, registrants are assigned to that service for which the Joint Service Induction Board finds them best fitted. At this point the registrants should show the assignment officers whatever qualification data are available. (e.g. Transcript, Qualification Summary, specific letters of recommendation)

The Army and Navy have agreed upon a single set of physical standards which are higher than those now applied by the Army. After the apportionment of the men who meet the higher standards, the Army is authorized to

This page replaces Page 1-c, dated March 30, 1943

accept any of the registrants whose minor physical defects prevent them from meeting the other standards. Registrants not accepted by either service will be returned to their local boards for reclassification.

Navy inductees may now be given the choice of three classifications of service: (a) They may join as Navy inductees. (b) They may volunteer for enlistment in the Regular Navy (six year enlistment) (c) They may volunteer for enlistment in Class V-6 of the Naval Reserve-SV. If they remain as Navy Inductees or voluntarily enlist in the Regular Navy, they will be kept in an active duty status and may be given seven days' leave at their own expense, upon the completion of which they will report to the Navy Recruiting Station for transfer to a Naval Training Station.

Navy Inductees that elect to volunteer for enlistment in the Naval Reserve will, upon completion of their enlistment, be ordered to the site of their local Board and placed on inactive duty for a period of seven days before being recalled to active duty and ordered to report to the Navy Recruiting Station for further transfer to a Training Station. The advantages of volunteering for the Regular Navy or the Naval Reserve are outlined as follows: (a) If he remains a Navy Inductee or voluntarily enlists in the Regular Navy, the government pays no transportation to him to return to his Local Board during the seven days of authorized leave. (b) In a Reserve status the government pays his way to the site of his Local Board and back to the Recruiting Station. (c) In a Regular Navy status a volunteer is required to pass a more rigid physical examination than in the case of a Navy Inductee or one volunteering for Class V-6, U.S. Naval Reserve. However, while in an authorized leave status, a Regular Navy man is entitled to hospitalization. Pay commences immediately upon enlistment in the Regular Navy, and men have the opportunity of making the Navy a career by enlisting in the Regular Navy. (d) In the regular Navy or Naval Reserve he is no longer subject to the provisions of the Selective Service Act which requires him on discharge to transfer to the Naval Reserve and remain therein for a period of ten years or until he is forty-five years of age. Instead (under present rulings) he will be required to serve throughout the duration plus six months thereafter, or a full six year enlistment in the case of an Inductee volunteering for the Regular Navy.

Voluntary Enlistments 17 year olds may now enlist in the Army in addition to the Navy and Marine Corps. They may enlist in the Army Air Forces Reserve if they qualify as Aviation Cadets and they may also enlist in the Army Enlisted Reserve Corps, unassigned. They will be called to active duty within six months after they reach the age of 18. As announced previously, the Navy and the Marine Corps will enlist 17 year olds who have graduated from an accredited high-school and who are enrolled in accredited colleges or universities. The deadline for this type of enlistment remains at March 15, 1943. Students who cannot qualify before this deadline will have opportunity to compete for selection under the Navy Collegiate Training Program. The Cadet Corps of the Merchant Marine is still open to applicants for direct appointment. Full information is contained on Page 13.

It is of course possible for registrants to apply for voluntary induction by executing Selective Service Form 165. They will be assigned to the service preferred insofar as they are qualified and vacancies exist.

To the Recipient:

This is the fourth installment of War Service Opportunities, consisting of 8 pages, numbered irregularly for insertion in your permanent file at the points indicated. Page 1-d should follow page 1-c, and so on.

You will observe that the series of pages numbered 1-a, 1-b, and so on carry brief advance notes, comments, and corrections; and that each page beyond page 2 (beginning with 2-a) is a unit dealing with one particular subject.

It is suggested that you attach a visible tab to page 2, to facilitate easy reference to the Table of Contents; and that you enter appropriate references to the present 8 pages in the blank space on page 2.

Prospective Activities of the Army Air Corps in Colleges It is expected that 150 major institutions of higher education will be visited between April 15 and May 15 by teams of two Air Corps officers who will remain a few days to make clear the requirements for Air Corps Cadets. These visits are expected to be followed by visits by Aviation Cadet Examining Boards to conduct examinations and effect enlistments of qualified members of the Senior class, for appointment as Aviation Cadets to be called to active service in June or soon thereafter.

Announcements are also imminent regarding a plan now in preparation, whereby underclassmen in college who can qualify for appointment as Aviation Cadets will probably soon be permitted to enlist in the Enlisted Reserve of the Air Corps, which will exempt them from any call by Selective Service, and allow them to continue their studies in college for some time, before being called to active service training.

Limited Number of College Students May be Commissioned as Probationary Ensigns, Naval Reserve--Class SC-V(P) A closely restricted number of qualified students well advanced in college courses in Business Administration, Accounting, or related subjects, may be commissioned as Probationary Ensigns, Naval Reserve, Class SC-V(P), with prospects of being kept in inactive status until the completion of their college work. Information as to detailed requirements should be applied for by addressing the Director of Naval Officer Procurement at the nearest Naval District Headquarters.

Institutional members of the American Council on Education receive three complete sets of War Service Opportunities, issued in installments at intervals from February through June 1942. Heads of other universities, colleges, and junior colleges receive one complete set free of charge. Additional complete sets, $2 each, or $1.50 each if purchased in lots of 10 to 24 copies, or $1 each in lots of 25 or more copies.

Current Changes to be Entered by Recipients on Appropriate Pages It is not practicable to issue complete new pages of *War Service Opportunities* for every minor current change in programs already described in previous issues. Several such changes are listed below, and *should be entered by the recipient* on the pages indicated.

Naval Reserve -- Class V-1 Accredited College Program (page 8-a) The comprehensive general examination announced for April 1942 for V-1 men who are now Sophomores will not be held, due to insufficient time for its preparation and administration. V-1 men who are now Sophomores may apply for enlistment in V-5 or V-7 (see pages 9,10). If not accepted for such enlistment, they will be called to active service as enlisted men in the Navy upon completion of their first two calendar years in college provided they pass the required physical examination. It is contemplated that the comprehensive general examination announced for March 1, 1943, for V-1 men who are now Freshmen, will be held as scheduled, to determine which men shall be transferred to V-5, or to V-7, or called to active duty as enlisted men in the Navy upon completion of two calendar years in college.

Marine Corps Reserve -- Candidates' Class for Commission (page 11) The upper age-limit for Seniors now in college has been changed to 26 years. Stress is also placed upon the fact that former college graduates up to the age of 26 are being accepted. The restriction regarding applications by married men has been modified to the extent that such men, otherwise qualified, are acceptable if they present a written statement from their wives certifying that the wife is not dependent upon the husband for support beyond the amount of his pay as a private.

Merchant Marine-- Deck or Engineer Cadet (page 13) The upper age-limit has been modified to the extent that waivers for over-age may be granted to candidates who submit acceptable evidence of having completed studies in an acceptable college. An allowance of one year in age may be granted for each academic year successfully completed, or its equivalent, up to a maximum of four years. Thus a waiver may be granted to a college graduate up to and including the age of 26. *It is important to note also that a shortening of the total training period from 22 months to 16 months is about to go into effect*. The new period will consist of 8 weeks at a basic cadet school, 7 months at sea, and 7 months at the Merchant Marine Academy at New York City. The facilities of the cadet schools are being expanded, and it is expected that within 8 months it will be possible to accommodate a total of 5,400 cadets in training, instead of the 2,000 earlier contemplated.

Naval Reserve--Class V-7 (page 10) To be eligible for enlistment in Class V-7, a college Junior must have attained Junior status on or before April 15, 1942. Students who attain Junior status after April 15, 1942 can become Apprentice Seamen, Class V-7, only by transfer from Class V-1 (Accredited College Program). It should also be noted on page 10 that the statement "*Pay*: As apprentice seaman, none" is erroneous. The pay of Apprentice Seamen is $21 a month. This is the grade in which V-7 men serve approximately one month to become acquainted with Navy fundamentals prior to beginning training as Naval Reserve Cadets.

Women's Bureau Studies the Outlook

An extensive survey conducted by the Women's Bureau of the United States Department of Labor disclosed the following facts relating to women in the war effort.

It is estimated that more than 2,000,000 women will be needed for work on the production of war materials before the end of 1942. New jobs are being created through the break-down of "big" processes into the simpler and less skilled operations. Shorter training periods are called for.

Women are being employed in the machine shops, on the assembly lines, and at inspection posts. A few of the outstanding examples of the expected demands for women are listed here:

Aircraft plants - one plant having none but male employees heretofore, expects to take more women; in February they had 27 women on the production line, and this may increase to 6,000 by summer

One large company with branch plants in different parts of the country has tried out women in one of its locations and expects to hire them elsewhere as soon as plans are formulated for various occupations

A large rubber goods manufacturer had representatives touring the country visiting the various co-educational and women's colleges, seeking women who had majored in chemistry

Ammunition plants already employ large numbers of women for making ammunition for small arms and for artillery. In the mechanical time-fuse department of a government arsenal 96 percent of the workers are women

Some electrical manufacturing companies are asking for women college graduates who have concentrated in mathematics, chemistry, or physics to serve as assistant engineers for work on estimates and mathematical computations; some women will also be able to find positions as radio physicists and technicians

It is the feeling of the Women's Bureau that qualified college women trained in mathematics, chemistry, and physics can find a place in any of these industries leading to a career after the termination of the present emergency. Courses qualifying women for positions as draftsmen, inspectors, supervisors, engine testing, computation, and a wide range of precision work, are now available to women through the opening of their defense training courses by some of the engineering schools of the universities.

More complete details on the role of women in war industries can be obtained by writing to the Women's Bureau, U.S. Department of Labor, Washington, D. C.

This page replaces Page 1-g, dated May 11, 1942

Application for Commission in the Army, Direct from Civil Life Page 26 of this installment of WAR SERVICE OPPORTUNITIES will be of interest to faculty members and alumni possessing special qualifications developed to high levels and wishing to find places for maximum use of those qualifications in the Army. The great majority of the officers needed for the Army will be trained and commissioned from the ranks through the medium of the Officer Candidate School Program (See page 2-a), but some will be appointed directly from civil life. The information on page 26 is directly applicable to aspirants above the age of 45, and also is pertinent for younger men having high-grade special qualifications for specific services.

Civilian Application for Commission in the Navy Commissions in the Naval Reserve for civilian applicants having superior qualifications for various forms of special service continue to be available in limited numbers according to the needs of the expanding organization. Faculty members and alumni wishing to explore this avenue for the application of their talents should make inquiry at the nearest Office of Naval Officer Procurement. These offices are located in many large cities, inland as well as coastal. The location of the nearest office can be obtained from a local Navy recruiting station or other local sources. Offering of probationary commissions to undergraduate college students is about to be discontinued, due to the expansion of the V-7 program to include special service. (See pages 1-d, 8-a, and 10).

Developments Regarding Enlisted Reserve Programs in Colleges The Secretary of War, in response to requests for further elaboration of his statement of September 10 to the effect that all or nearly all members of the Army Enlisted Reserve Corps in colleges will probably be called to active duty soon after reaching the age at which other young men are called under Selective Service, has said:

"Until called they can and should proceed with their studies. You will note I have pointed out that the Army will determine what further training is required by those who are called, to best qualify them for military duty. For this training the War Department will adopt such methods and utilize such facilities of its own or of the colleges as are deemed best suited to meet military requirements as they then exist. The intervening time will afford a period for adjustment, and for the formulation of plans for such additional specific training as the Army may then deem to be required. These plans, including probable modification of the college ROTC courses, are in the course of formulation."

The statements of the Secretary of War do not apply to the Naval Reserve programs in colleges, as described on pages 8-a, 9, 10, and 11 of WAR SERVICE OPPORTUNITIES. It has been ascertained from the Navy Department that no immediate changes are at present contemplated in any of these programs, nor in the Naval R.O.T.C.

Opportunities for Negro College Students in the Armed Forces

Accredited Negro colleges are eligible to participate in the Army Enlisted Reserve Corps program, which now embraces and includes the Air Forces·Enlisted Reserve program. Qualified Negro students in any participating institution (whether a Negro institution or otherwise) may enlist in the Army Enlisted Reserve Corps on the same conditions as other students.

At present the only facilities for the training of Negro flying officers of the Army Air Forces are concentrated in a school for pursuit pilots at Tuskegee, Ala., receiving about 20 candidates every 5 weeks to be trained to become officer pilots of pursuit planes (not as bomber pilots, navigators, bombardiers or ground officers).

The Officer Candidate Schools in all branches of the Army are open to selected Negro soldiers, and substantial numbers of Negro Officers are being commissioned through that avenue.

Although the general policy of the War Department is not to establish new R.O.T.C. units, four new units will be inaugurated in the coming Autumn at Negro institutions, as follows: West Virginia State College, Institute, W. Va. (Field Artillery), Hampton Institute, Hampton, Va. (Coast Artillery Corps), Negro Agricultural and Technical College, Greensboro, N.C. (Infantry), and Prairie View State Normal and Industrial College, Prairie View, Tex. (Infantry).

Negro students are at present not eligible for the Navy V-1 (Accredited College Program), nor for V-5 (Naval Aviation), nor V-7 (Deck or Engineering Officers); but on June 1, 1942 the Navy and the Marine Corps announced plans for immediate enlistment of Negroes for varied types of active duty. Enlistments are taken at all Navy recruiting stations.

Navy facilities are expected to accommodate 1,000 newly enlisted Negroes per month. Those accepted for general service will receive 8 weeks of recruit training at Great Lakes Naval Training Station, and some will be selected for a 16-week course at Hampton Institute to undergo training as electricians, carpenters, shipfitters, machinists, metalsmiths, firemen and cooks. Other training schools for Negro enlisted men will include a 16-week course to become gunners, quartermasters, yeomen, storekeepers and cooks; a 16-week course to become radiomen and signalmen; and a 4-week course to become armed guards.

Some qualified Negroes will be enlisted for duty in construction activities at the Naval Training Station at Norfolk, Va. Applicants with musical talents will be selected for four weeks of duty at Great Lakes Training Station, after which some will be selected for bands to be attached to several Naval stations, including certain Naval Air Stations and Pre- Flight Training Schools.

The Marine Corps Reserve is enlisting during June and July its first battalion of Negroes. This will be a composite unit including Infantry, Tanks, Artillery, Anti-Aircraft Guns, and Machine Guns, numbering about 900 men in all. It will include some places for skilled radio operators, electricians, accountants, carpenters, draftsmen, band musicians, riggers and blacksmiths. The training center will be near New River, N.C.

CHANGES IN PAY OF MEMBERS OF THE ARMED FORCES

The "Pay Readjustment Act of 1942", approved June 16, 1942 and retroactive to June 1, effects substantial raises in the pay rates of enlisted men and junior officers in the Armed Forces.

Such of the new rates as directly affect the several pages of War Service Opportunities dated prior to June 1 and bearing entries regarding pay and allowances are outlined below:

Minimum for the grade of Private, or Apprentice Seaman, $50 a month.

For Private, First Class, or Seaman, Second Class, $54 a month.

Rates for all grades of noncommissioned officers and petty officers are also somewhat higher than formerly.

Base pay for Cadets in the various services is unchanged.

For the rank of Second Lieutenant, or Ensign, base pay is raised to $1,800 a year, and allowances for subsistence and quarters are changed to the following rates:

	Allowances				
Base Pay	Without Dependents		With Dependents		Total
(Initial)	Subsistence	Quarters	Subsistence	Quarters	(Maximum)
$150 a month	$21 a month	$45 a month	$42 a month	$60 a month	$252 a month

Officers receive no allowance for quarters when in stations where adequate quarters for themselves and their dependents are furnished by the Government, and officers without dependents receive no allowance for quarters when on duty in the field or at sea.

Extra flight pay for officers and enlisted men doing flight duty is in addition to the foregoing figures.

Base pay for female nurses in the Army and the Navy is now as follows:

First 3 years	Second 3 years	Third 3 years	Fourth 3 years	After 12 years
$1,080 a year	$1,260 a year	$1,440 a year	$1,620 a year	$1,800 a year

All the foregoing changes apply immediately to the various pages of War Service Opportunities on which pay information appears. Appropriate precise entries will be made in ensuing installments in the course of page-by-page revision. Meantime it should be understood that the changes apply to all the armed services without discrimination.

The full text of the "Pay Readjustment Act of 1942" carrying other details, Public Law 607 - 77th Congress, Chapter 413 - 2d Session (13 pp.), is not distributed by the American Council on Education, but is accessible in depositories of Government documents, including many institutional and public libraries.

This table is a part of the cumulative loose-leaf bulletin, WAR SERVICE OPPORTUNITIES FOR COLLEGE AND UNIVERSITY STUDENTS, issued in frequent installments by the American Council on Education. Three free copies of the cumulative bulletin go to each institutional member of the American Council on Education, and one free copy to the head of every other university, college and junior college in the United States. Institutions and individuals desiring additional complete sets of the cumulative bulletin may subscribe for them at prices set forth on page 1-i of the bulletin, dated July 6, 1942.

Additional copies of this table (Table II - The Civil Service , issued August 17, 1942) may be purchased in quantities as follows:
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POSITIONS NOT REQUIRING A COLLEGE DEGREE, BUT GENERALLY PERMITTING PERTINENT COLLEGE TRAINING TO BE SUBSTITUTED IN PART OR IN WHOLE FOR REQUIRE

POSITIONS	EXAMINATION ANNOUNCEMENTS	GRADES AND SALARIES	MINIMUM EDUCATION	DUTIES
Usually suited to Persons Having Had Not More Than Two Years in College				
Engineering Draftsman	No. 174 (1941)[a] Unassembled	6 grades, $1,440 to $2,600	4-year high school	Subprofessional work in one of twenty opti
Inspector-Trainee(Junior), Ordnance Material	Local Board, Assembled[b]	1 grade, $1,440 (3 mos.)[c]	1 year of college[g]	To receive training in fundamentals of ord
Inspector, Powder and Explosives	No. 104 (1940), Unassembled[o]	5 grades, $1,620 to $2,600	9 hrs, coll. org. chem.[h]	To inspect and test explosives at arsenal
Radio Mechanic-Technician	No. 134 (1941), Unassembled[o]	5 grades, $1,440 to $2,300	1 year engrng. or tech.[i]	Construction, assembly, operation and rep
Technical and Scientific Aid	No. 133 (1941), Unassembled	4 grades, $1,440 to $2,000	4-year high school[j]	6 options: Radio, explosives, chemistry,
Trainee Repairman, Signal Corps Equipment	District, Assembled	1 grade, $1,440 (6 mos.)[c]	1 year of engineering[k]	To receive training in radio, telephone,
Usually Suited to Persons Having Had From Two to Four Years in College				
Engineering Aid	No. 206 (1942), Unassembled[o]	6 grades, $1,440 to $2,600	4-year high school	Photogrammetric, geodetic, hydrographic,
Expediter, Marine Equipment	No. 62 (1941), Unassembled[o]	1 grade, $3,200	None required[m]	Liaison with factories making marine prop
Inspector, Defense Production Protective Service	No. 180 (1941), Unassembled[o]	6 grades, $2,600 to $5,600	None required[m]	Prevention of accidents, breakdowns, sabo
Inspector, Engineering Materials	No. 81 (1941), Unassembled[o]	4 grades, $1,800 to $2,600	None required[m]	Testing; 4 options- Steel hulls, mechanic
Inspector, Engineering Materials (Aeronautical)	No. 54 Revised (1941), Un[o]	5 grades, $1.620 to $2,600	None required[m]	Testing aeronautical materials on one of
Inspector, Naval Ordnance Materials	No. 95 Revised (1941), Un[o]	5 grades, $1,620 to $2,600	None required[m]	4 options: optical instruments, naval gun
Inspector, Ordnance Material	No. 124 (1939), Unassembled[o]	5 grades, $1,620 to $2,600	4-year high school	Testing and inspecting materials and comp
Inspector, Ship Construction	No. 82 (1941), Unassembled[o]	3 grades, $2,000 to $2,600	Varies with experience	4 options: Electrical, mechanical, steel
Inspector, Shipyard	No. 67 (1941), Unassembled[o]	Various, $2,300 to $3,800	Varies with experience	5 options: Hull, hull outfitting, machine
Instructor, Aviation Technical Schools (Army and Navy)	Local Board, Inassembled[od]	5 grades, $1,620 to $3,800	None required[m]	Instructional duties under direct supervi
Instructor (Automotive, Radio, etc.)	No.147 (1941),Unassembled[oe]	5 grades, $2,000 to $4,600	None required[m]	Instructional duties in one of six option
Instructor, Motor Transport	No.212 (1942),Unassembled[o]	4 grades, $2,600 to $4,600	2 years engrng. or tech.[n]	Instructional duties in one of eleven opt
Investigator	No.171 (1941),Unassembled[o]	3 grades, $2,600 to $4,600	No college required[m]	Safeguarding military information and pro
Junior Investigator	No.232 (1942),Unassembled	1 grade, $2,600	No college required[m]	Confidential work involving travel and co
Investigator, Air Safety	No.208 (1942),Unassembled[ae]	1 grede, $3,800	None required	Investigating aircraft accidents and prac
Technical Assistant (Engineering)	No.177 (1941), Unassembled	1 grade, $1,800	3 years of college[p]	General subprofessional work in some bran
Training Specialist	No.199 (1942), Unassembled[o]	5 grades, $2,600 to $5,600	4 years of college[q]	3 options: Diversified techniques, motion
Cost Auditor or Accountant	Recruiting Circ.73 (1942)	Various, $2,600 to $5,600	No college required[m]	Analyses, inspections and surveys of acco
Zone Deputy Collector	District, Assembled[f]	1 grade, $1,800	2 years of accounting[r]	Canvass for delinquent internal revenue;
Statistician	Recruiting Circ. 25 (1942)	Various, $2,600 to $5,600	College not required[m]	Analyses: Industrial, commodity, price, l
Medical Technician	No.248 (1941),Unassembled[o]	4 grades, $1,440 to $2,000	No college required[m]	Laboratory work in 3 options: General, Ro
Community Recreation Organizer and Specialist in Social Group Work	Recruiting Circ. 72 (1942)	Various, $2,000 to $4,600	College not required[m]	Plan and coordinate group recreation prog

o - Listed as "Open continous"
a - Open until December 31, 1942.
b - Announcements Noc. 7-366 and 7-367, Chicago and Detroit respectively.
c - This grade is for trainees and the number of months noted is the normal length of the training period, upon successful completion of which the trainee becomes eligible for positions of higher grade in the same field.
d - Announcements Nos. 7-50 and 7-323, issued by the Secretary, Board of U.S. Civil Service Examiners, Chanute Field, Rantoul, Illinois.
e - Oral examination.
f - Open at various times in the 13 different Civil Service Districts.

g - 1-year college course in engineering, or a 2-year college
through trigonometry (6 hours), and chemistry and/or physic
h - At least 18 hours in college organic chemistry, except as
for as much as 9 hours of such credit.
i - Varies with experience; and completion of E.S.M.W.T. course
j - Certain types of experience may be substituted.
k - Must have included courses in radio, or an E.S.M.W.T. cours
m - For these examinations the principal basis of rating is pr
education, but substitutions are permitted in whole or in
full texts of the examination announcements.
n - May have been in school of engineering, industrial arts co
4-year college course including course in motor transporta
p - In engineering. Must include as much as 8 hours in mathema
integral calculus; 6 hours in physics; and 6 hours in tech
engineering except chemical. E.S.M.W.T. courses are accept

Positions for Which the Principal Requirement is Business or Industrial Experience of the Specified Types, and for Which College Study, though Desirable, is Not Re-

WAR SERVICE OPPORTUNITIES

FOR COLLEGE AND UNIVERSITY STUDENTS

AUGUST 17, 1942

TABLE II - THE CIVIL SERVICE

DATED AUGUST 17, 1942, AND IS NECESSARILY SUBJECT TO CHANGES OCCURING AFTER THAT DATE

ties in the armed forces, see **TABLE I** - THE ARMED FORCES, issued June 20 and distributed
anner as the present table.

FOR MORE COMPLETE INFO
ANNOUNCEMENTS. For spe
of U.S. Civil Service
States Civil Service C
announcements.

The U.S. Civil Service
Form 2279 and suppleme
listing all current op
applications. Form 227
at universities and co

Recruiting Circulars,
sent to appropriate in
qualified applicants,
Service District Offic

RED PRACTICAL EXPERIENCE

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tional branches of drafting.

rdnance material inspection.

ls and commercial laboratories.
pair of radio equipment.

physics, metallurgy, fuels.

power and light equipment.

(veying.
topographic or cadastral sur-
pelling or outfitting equipment.

otage, delays, in defense plants.

cal, electrical, radio.

eight optional branches.

ns, munitions, ordnance units.

ponents for ordnance equipment.

hulls, wood hulls.
ery, electrical joiner.

vision in aviation service schools.

onal branches.
ptional branches.
roperty from theft, sabotage.
conferring with all types.
actices related to air safety.

anch of engineering.
on picture, trade and industrial.
counts of manufacturing concerns.
; instruct and assist taxpayers.
labor market, economic.
Roentgenology, surgery.

ograms in defense areas.

course including mathematics
ics (6 hours).
experience may be substitutes

ses in radio may be substituted

rse in telephone or radio work.
ractical experience rather than
part, as stipulated in the

ollege, or school of technology.
ation is also satisfactory.
atics, embracing differential and
hnical subjects in any branch of
ted.

POSITIONS REQUIRING A COLLEGE DEGREE WITH SPECIFIED MAJOR

POSITIONS	EXAMINATION ANNOUNCEMENTS	GRADES AND SALARIES	
Majors in the Physical Sciences and Engineering			
Junior Physicist	No.253 (1942),Unassembled[o]	1 grade, $2,000	Assisting in or performing r
Physicist (Any Specialized Branch)	No.236 (1942),Unassembled[o]	5 grades, $2,600 to $5,600	Planning, directing, or perfo
Junior Chemist(Now Open only to Women)	No.219 (1942),Unassembled[o]	1 grade, $2,000	Research, investigative, or
Chemist (Explosives)	No.235 (1942),Unassembled[o]	5 grades, $2,600 to $5,600	Planning, supervising, or co
Research and Analytical Chemist	No.185 (1942),Unassembled[o]	5 grades, $2,600 to $5,600	Planning, supervising, or co
Junior Astronomer	No.179 (1941),Unassembled[o]	1 grade, $2,000	Astronomical observations, c
Junior Meteorologist	No.127 (1941),Unassembled	1 grade, $2,000	Charting and analysis of wea
Meteorologist	No.237 (1942),Unassembled[o]	5 grades, $2,600 to $5,600	Planning, directing, or cond
Junior Geologist	No.249 (1942),Unassembled	1 grade, $2,000	Geologic mapping and recordi
Geologist	Recruiting Circ. 62 (1942)	Various, $2,600 to $5,600	Mapping; study of mineral de
Junior Metallurgist	No.254 (1942),Unassembled	1 grade, $2,000	Investigative, developmental
Metallurgist	No.238 (1942),Unassembled	6 grades, $2,000 to $4,600	Planning, directing, or cond
Technologist (Any Specialized Branch)	No.188 (1942),Unassembled	6 grades, $2,000 to $5,600	Research or testing in explo
Naval Architect	No.246 (1942),Unassembled[o]	5 grades, $2,600 to $5,600	Designs, specifications, and
Junior Engineer (Nearly All Branches)	No.122 (1941),Unassembled[s]	1 grade, $2,000	Testing materials and appara
Engineer (Most Branches)	No.173 (1941),Unassembled[t]	6 grades, $2,600 to $6,500	Performing or supervising de
Chemical Engineer	No.163 (1941),Unassembled[o]	5 grades, $2,600 to $5,600	Perfoming or supervising wo
Marine Engineer (All Branches)	No.247 (1942),Unassembled[u]	5 grades, $2,600 to $5,600	Design, plans, specification
Junior Aeronautical Inspector (Trainee)	No.202 (1942),Unassembled[o]	1 grade, $2,600	To receive training in the s
Inspector, Radio	No.216 (1942),Unassembled[s]	2 grades, $2,000 to $2,600	Examination of radio operato
Inspector, Signal Corps Equipment	No.108 (1940),Unassembled[o]	3 grades, $2,000 to $3,200	Testing radio, telephone, te
Radio Monitoring Officer	No.146 (1941),Unassembled[v]	2 grades, $2,600 to $3,200	Surveillance of communicatio
Superintendent of Construction	No.217 (1942),Unassembled[o]	5 grades, $3,200 to $6,500	To organize men and material and laborers on large constr
Majors in Medicine and Related Fields			
Medical Officer	No.130 (1941),Unassembled[o]	3 grades, $3,200 to $4,600	Aviation medicine; cardiolog
Physician	No.211 (1942),Unassembled[o]	1 grade, $4,000	District physician in the Pa
Pharmacologist and Toxicologist	No.186 (1942),Unassembled[o]	4 grades, $2,600 to $4,600	Testing drugs; research in d
Veterinarian	No.143 (1941),Unassembled[o]	2 grades, $2,000 to $2,600	Sanitary inspection of food
Nursing Education Consultant	No.250 (1942),Unassembled	4 grades, $2,600 to $4,600	Assistance in administration
Public Health Nursing Consultant	No.225 (1942),Unassembled[o]	5 grades, $2,600 to $5,600	To coordinate, supervise, or
Staff Dietitian	No.44 (1941), Unassembled[o] and Recruiting Circ.15	1 grade, $1,800	To direct or supervise food
Majors in the Social Sciences and Public Administration			
Economist	No.118 (1941),Unassembled[o]	5 grades, $2,600 to $5,600	To plan, direct, or conduct
Geographer	Recruiting Circ. 74(1942)	Various, $2,000 to $5,600	Study of foreign areas criti
Public Opinion Analyst	Recruiting Circ. 24(1942)	Various, $2,000 to $5,600	Analysis of press reports, r
Attorney (Junior Grades)	No. 245 (1942), Assembled	4 grades, $1,800 to $3,200	Junior grades of professiona
Consultant in Public Assistance	Recruiting Circ. 75(1942)	Various, $2,600 to $4,600	Planning, consultation, and
Personnel Officer	No. 243,and R.C.52 (1942)[x]	Various, $2,600 to $6,500	Work in various fields of pe
Administrative Analyst	Recruiting Circ.14 (1942)[x]	Various, $2,600 to $6,500	Options include: Management
Executive or Administrative Officer	R.C. 17, Revised (1942)[x]	Various, $2,600 to $8,000	To serve as executive head o
Other Majors			
Architect	No.222 (1942),Unassembled[o]	2 grades, $2,000 to $3,200	In connection with constructi
Physiotherapy Aide	No.24 Revised,Unassembled[ow]	2 grades, $1,620 to $1,800	To administer massage, elctr
Student Physiotherapy Aide	No.117 (1941),Unassembled[os]	2 grades, highest $1,440	To receive training intended
Occupational Therapy Aide	Recruiting Circ. 29 (1942)[y]	2 grades, $1,620 to $1,800	To administer occupational th
Junior Professional Assistant	No.251 (1942), Assembled[sz]	1 grade, $2,000	Many forms of service, among administration, library

WAR SERVICE OPPORTUNITIES

FOR COLLEGE AND UNIVERSITY STUDENTS

AUGUST 17, 1942

TABLE II - THE CIVIL SERVICE

THIS TABLE IS DATED AUGUST 17, 1942, AND IS NECESSARILY SUBJECT TO CHANGES OCCURING AFTER THAT DATE

For opportunities in the armed forces, see TABLE I - THE ARMED FORCES, issued June 20 and distributed in the same manner as the present table.

NENT COLLEGE TRAINING TO BE SUBSTITUTED IN PART OR IN WHOLE FOR REQUIRED PRACTICAL EXPERIENCE

MINIMUM EDUCATION	DUTIES
4-year high school	Subprofessional work in one of twenty optional branches of drafting.
1 year of college[g]	To receive training in fundamentals of ordnance material inspection.
9 hrs, coll. org. chem.[h]	To inspect and test explosives at arsenals and commercial laboratories.
1 year engrng. or tech.[i]	Construction, assembly, operation and repair of radio equipment.
4-year high school[j]	6 options: Radio, explosives, chemistry, physics, metallurgy, fuels.
1 year of engineering[k]	To receive training in radio, telephone, power and light equipment.
4-year high school	Photogrammetric, geodetic, hydrographic, topographic or cadastral surveying.
None required[m]	Liaison with factories making marine propelling or outfitting equipment.
None required[m]	Prevention of accidents, breakdowns, sabotage, delays, in defense plants.
None required[m]	Testing; 4 options- Steel hulls, mechanical, electrical, radio.
None required[m]	Testing aeronautical materials on one of eight optional branches.
None required[m]	4 options: optical instruments, naval guns, munitions, ordnance units.
4-year high school	Testing and inspecting materials and components for ordnance equipment.
Varies with experience	4 options: Electrical, mechanical, steel hulls, wood hulls.
Varies with experience	5 options: Hull, hull outfitting, machinery, electrical joiner.
None required[m]	Instructional duties under direct supervision in aviation service schools.
None required[m]	Instructional duties in one of six optional branches.
2 years engrng. or tech.[n]	Instructional duties in one of eleven optional branches.
No college required[m]	Safeguarding military information and property from theft, sabotage.
No college required[m]	Confidential work involving travel and conferring with all types.
None required	Investigating aircraft accidents and practices related to air safety.
3 years of college[p]	General subprofessional work in some branch of engineering.
4 years of college[q]	3 options: Diversified techniques, motion picture, trade and industrial.
No college required[m]	Analyses, inspections and surveys of accounts of manufacturing concerns.
2 years of accounting[r]	Canvass for delinquent internal revenue; instruct and assist taxpayers.
College not required[m]	Analyses: Industrial, commodity, price, labor market, economic.
No college required[m]	Laboratory work in 3 options: General, Roentgenology, surgery.
College not required[m]	Plan and coordinate group recreation programs in defense areas.

g - 1-year college course in engineering, or a 2-year college course including mathematics through trigonometry (6 hours), and chemistry and/or physics (6 hours).

h - At least 18 hours in college organic chemistry, except as experience may be substitutes for as much as 9 hours of such credit.

i - Varies with experience; and completion of E.S.M.W.T. courses in radio may be substituted

j - Certain types of experience may be substituted.

k - Must have included courses in radio, or an E.S.M.W.T. course in telephone or radio work.

m - For these examinations the principal basis of rating is practical experience rather than education, but substitutions are permitted in whole or in part, as stipulated in the full texts of the examination announcements.

n - May have been in school of engineering, industrial arts college, or school of technology. 4-year college course including course in motor transportation is also satisfactory.

p - In engineering. Must include as much as 8 hours in mathematics, embracing differential and integral calculus; 6 hours in physics; and 6 hours in technical subjects in any branch of engineering except chemical. E.S.M.W.T. courses are accepted.

POSITIONS	EXAMINATION
Majors in the Physical Sciences and Engineering	
Junior Physicist	No.253 (19
Physicist (Any Specialized Branch)	No.236 (19
Junior Chemist(Now Open only to Women)	No.219 (19
Chemist (Explosives)	No.235 (19
Research and Analytical Chemist	No.185 (19
Junior Astronomer	No.179 (19
Junior Meteorologist	No.127 (19
Meteorologist	No.237 (19
Junior Geologist	No.249 (19
Geologist	Recruiting
Junior Metallurgist	No.254 (19
Metallurgist	No.238 (19
Technologist (Any Specialized Branch)	No.188 (19
Naval Architect	No.246 (19
Junior Engineer (Nearly All Branches)	No.122 (19
Engineer (Most Branches)	No.173 (19
Chemical Engineer	No.163 (19
Marine Engineer (All Branches)	No.247 (19
Junior Aeronautical Inspector (Trainee)	No,202 (19
Inspector, Radio	No.216 (19
Inspector, Signal Corps Equipment	No.108 (19
Radio Monitoring Officer	No.146 (19
Superintendent of Construction	No.217 (19
Majors in Medicine and Related Fields	
Medical Officer	No.130 (19
Physician	No.211 (19
Pharmacologist and Toxicologist	No.186 (19
Veterinarian	No.143 (19
Nursing Education Consultant	No.250 (19
Public Health Nursing Consultant	No.225 (19
Staff Dietitian	No.44 (194 and Rec
Majors in the Social Sciences and Public Administra	
Economist	No.118 (19
Geographer	Recruiting
Public Opinion Analyst	Recruiting
Attorney (Junior Grades)	No. 245 (1
Consultant in Public Assistance	Recruiting
Personnel Officer	No. 243,an
Administrative Analyst	Recruiting
Executive or Administrative Officer	R.C. 17, R
Other Majors	
Architect	No.222 (19
Physiotherapy Aide	No.24 Revi
Student Physiotherapy Aide	No.117 (19
Occupational Therapy Aide	Recruiting
Junior Professional Assistant	No.251 (19

FOR MORE COMPLETE INFORMATION, CONSULT THE OFFICIAL U.S. CIVIL SERVICE EXAMINATION ANNOUNCEMENTS. For specified announcements and application forms, apply to the Board of U.S. Civil Service Examiners at first- or second-class postoffices, or to the United States Civil Service Commission, Washington, D.C., or to any other office listed in the announcements.

The U.S. Civil Service Commission issues, usually at intervals of about one week, its Form 2279 and supplements, UNITED STATES CIVIL SERVICE EMPLOYMENT OPPORTUNITIES, briefly listing all current openings for which the Commission at Washington is accepting applications. Form 2279 and supplements are sent to guidance and placement officers at universities and colleges, and may be posted on bulletin boards.

Recruiting Circulars, constituting a relatively new form of brief announcement, are sent to appropriate institutions and associations where they are most likely to reach qualified applicants, and are also available for inspection at the thirteen Civil Service District Offices listed at the lower right-hand corner of this table.

POSITIONS REQUIRING A COLLEGE DEGREE	WITH SPECIFIED MAJOR	
ON ANNOUNCEMENTS	GRADES AND SALARIES	DUTIES
942),Unassembled[o]	1 grade, $2,000	Assisting in or performing research or investigate work in a branch of physics.
942),Unassembled[o]	5 grades, $2,600 to $5,600	Planning, directing, or performing professional work in a field of physics.
942),Unassembled[o]	1 grade, $2,000	Research, investigative, or other work in a branch of chemistry
942),Unassembled[o]	5 grades, $2,600 to $5,600	Planning, supervising, or conducting research or developmental work in explosives chemistry.
942),Unassembled[o]	5 grades, $2,600 to $5,600	Planning, supervising, or conducting investigations in a special branch of chemistry.
941),Unassembled[o]	1 grade, $2,000	Astronomical observations, computations, publications, care of instruments and equipment.
941),Unassembled	1 grade, $2,000	Charting and analysis of weather or climatological data and related scientific work.
942),Unassembled[o]	5 grades, $2,600 to $5,600	Planning, directing, or conducting investigations or research in a special branch of meteorology.
942),Unassembled	1 grade, $2,000	Geologic mapping and recording; study of mineral deposits and ground waters.
g Circ. 62 (1942)	Various, $2,600 to $5,600	Mapping; study of mineral deposits and ground waters; studies in economic geology.
942),Unassembled	1 grade, $2,000	Investigative, developmental, or production work in some branch of metallurgy.
942),Unassembled	6 grades, $2,000 to $4,600	Planning, directing, or conducting research or production in ferrous or nonferrous metals.
942),Unassembled	6 grades, $2,000 to $5,600	Research or testing in explosives, fuels, plastics, rubber, minerals, textiles, or others.
942),Unassembled[o]	5 grades, $2,600 to $5,600	Designs, specifications, and estimates related to construction and repair of naval vessels.
941),Unassembled[s]	1 grade, $2,000	Testing materials and apparatus; research; mapping; computations; reporting on projects.
941),Unassembled[t]	6 grades, $2,600 to $6,500	Performing or supervising designing, construction, or surveys in various engineering branches.
941),Unassembled[o]	5 grades, $2,600 to $5,600	Performing or supervising work connected with industrial or agricultural chemical processes.
942),Unassembled[u]	5 grades, $2,600 to $5,600	Design, plans, specifications, layout, and testing of various types of marine machinery.
942),Unassembled[o]	1 grade, $2,600	To receive training in the several types of inspection by the Civil Aeronautics Administration.
942),Unassembled[s]	2 grades, $2,000 to $2,600	Examination of radio operators and equipment on ships, on aircraft, and at land stations.
940),Unassembled[o]	3 grades, $2,000 to $3,200	Testing radio, telephone, telegraph, and power units, assemblies, and components.
941),Unassembled[v]	2 grades, $2,600 to $3,200	Surveillance of communications channels by monitoring and recording, and related duties.
942),Unassembled[o]	5 grades, $3,200 to $6,500	To organize men and materials for efficient construction operations; to direct foremen, mechanics, and laborers on large construction projects; to inspect materials and workmanship.
941),Unassembled[o]	3 grades, $3,200 to $4,600	Aviation medicine; cardiology; general public health; and 12 additional options.
942),Unassembled[o]	1 grade, $4,000	District physician in the Panama Canal Zone.
942),Unassembled[o]	4 grades, $2,600 to $4,600	Testing drugs; research in drug effects by use of experimental animals and otherwise.
941),Unassembled[o]	2 grades, $2,000 to $2,600	Sanitary inspection of food animals, processing plants, meats and dairy products.
942),Unassembled	4 grades, $2,600 to $4,600	Assistance in administration of federal subsidies for training of nurses; inspection.
942),Unassembled[o]	5 grades, $2,600 to $5,600	To coordinate, supervise, or advise and demonstrate concerning public health nursing services.
41), Unassembled[o] ecruiting Circ.15	1 grade, $1,800	To direct or supervise food service and perform dietetic and nutritional work in hospitals.
ration		
941),Unassembled[o]	5 grades, $2,600 to $5,600	To plan, direct, or conduct professional economic research in one or more specialized branches.
g Circ. 74(1942)	Various, $2,000 to $5,600	Study of foreign areas critically concerned in defense or post-war planning.
g Circ. 24(1942)	Various, $2,000 to $5,600	Analysis of press reports, radio broadcasts, motion pictures, and activities of organizations.
1942), Assembled	4 grades, $1,800 to $3,200	Junior grades of professional work in the service of various governmental agencies.
g Circ. 75(1942)	Various, $2,600 to $4,600	Planning, consultation, and research in federal and state administration of public welfare.
and R.C.52 (1942)[x]	Various, $2,600 to $6,500	Work in various fields of personnel administration as head or member of a personnel division.
g Circ.14 (1942)[x]	Various, $2,600 to $6,500	Options include: Management and Procedural analysis; budget and fiscal administration.
Revised (1942)[x]	Various, $2,600 to $8,000	To serve as executive head or administrative assistant to the head of an agency or subdivision.
942),Unassembled[o]	2 grades, $2,000 to $3,200	In connection with construction projects, 3 options: Design, specification, estimating.
vised,Unassembled[ow]	2 grades, $1,620 to $1,800	To administer massage, electrotherapy, actinotherapy, hydrotherapy, and remedial exercise.
1941),Unassembled[os]	2 grades, highest $1,440	To receive training intended to lead to promotion to the grade of Physiotherapy Aide.
g Circ. 29 (1942)[y]	2 grades, $1,620 to $1,800	To administer occupational therapy to patients in a wide variety of industries and arts and crafts.
942), Assembled[sz]	1 grade, $2,000	Many forms of service, among which are those involving training in public administration, business administration, library science, economics, statistics, and mathematics through calculus.

Navy)	Local Board, Inassembled[o,d]	5 grades, $1,620 to $3,800	None required[m]	Instructional duties under direct su
Instructor (Automotive, Radio, etc.)	No.147 (1941), Unassembled[o,e]	5 grades, $2,000 to $4,600	None required[m]	Instructional duties in one of six c
Instructor, Motor Transport	No.212 (1942), Unassembled[o]	4 grades, $2,600 to $4,600	2 years engrng. or tech.[n]	Instructional duties in one of eleve
Investigator	No.171 (1941), Unassembled[o]	3 grades, $2,600 to $4,600	No college required[m]	Safeguarding military information an
Junior Investigator	No.232 (1942), Unassembled	1 grade, $2,600	No college required[m]	Confidential work involving travel a
Investigator, Air Safety	No.208 (1942), Unassembled[a,e]	1 grade, $3,800	None required	Investigating aircraft accidents and
Technical Assistant (Engineering)	No.177 (1941), Unassembled	1 grade, $1,800	3 years of college[p]	General subprofessional work in some
Training Specialist	No.199 (1942), Unassembled[o]	5 grades, $2,600 to $5,600	4 years of college[q]	3 options: Diversified techniques, m
Cost Auditor or Accountant	Recruiting Circ.73 (1942)	Various, $2,600 to $5,600	No college required[m]	Analyses, inspections and surveys of
Zone Deputy Collector	District, Assembled[f]	1 grade, $1,800	2 years of accounting[r]	Canvass for delinquent internal reve
Statistician	Recruiting Circ. 25 (1942)	Various, $2,600 to $5,600	College not required[m]	Analyses: Industrial, commodity, pri
Medical Technician	No.248 (1941), Unassembled[o]	4 grades, $1,440 to $2,000	No college required[m]	Laboratory work in 3 options: Genera
Community Recreation Organizer and Specialist in Social Group Work	Recruiting Circ. 72 (1942)	Various, $2,000 to $4,600	College not required[m]	Plan and coordinate group recreation

o - Listed as "Open continous"
a - Open until December 31, 1942.
b - Announcements Noc. 7-366 and 7-367, Chicago and Detroit respectively.
c - This grade is for trainees and the number of months noted is the normal length of the training period, upon successful completion of which the trainee becomes eligible for positions of higher grade in the same field.
d - Announcements Nos. 7-50 and 7-323, issued by the Secretary, Board of U.S. Civil Service Examiners, Chanute Field, Rantoul, Illinois.
e - Oral examination.
f - Open at various times in the 13 different Civil Service Districts.
g - 1-year college course in engineering, or a 2-year coll through trigonometry (6 hours), and chemistry and/or p
h - At least 18 hours in college organic chemistry, except for as much as 9 hours of such credit.
i - Varies with experience; and completion of E.S.M.W.T. c
j - Certain types of experience may be substituted.
k - Must have included courses in radio, or an E.S.M.W.T.
m - For these examinations the principal basis of rating i education, but substitutions are permitted in whole or full texts of the examination announcements.
n - May have been in school of engineering, industrial art 4-year college course including course in motor transp
p - In engineering. Must include as much as 8 hours in mat integral calculus; 6 hours in physics; and 6 hours in engineering except chemical. E.S.M.W.T. courses are ac
q - Specified practical experience may be substituted, yea
r - In a residence school of accountancy; not necessarily

Positions for Which the Principal Requirement is Business or Industrial Experience of the Specified Types, and for Which College Study, though Desirable, is Not Required. Graduate Study or College Teaching in the Specified Field is in Some Instances Acceptable as Required Experience.

Industrial Specialist - $2,600 to $6,500 - Recruiting Circs. 57 to 61 inclusive, and 63 to 71 inclusive. (For many specialized fields within such broad categories as iron and steel manufactures; electrical machinery; nonferrous metals; stone, clay, and glass; general industrial machinery; chemicals; petroleum and coal products; transportation equipment; furniture; leather; rubber; miscellaneous).

Commodity Specialist - $2,600 to $6,500 - Recruiting Circs. 1 to 13, 16, 30 to 44, and 47 to 49 inclusive, (For many specialized fields within such categories foods; animal feeds; fertilizers; leather; textiles; apparel; paper; ;umber and wood products; general merchandising).

Business Specialist - $2,600 to $5,600 - Recruiting Circs. 19, 54, 55. (Chemicals and drugs; copper and brass mills; nonferrous foundries).

Marketing Analyst	$2,600 to $6,500	Recruiting Circ. 26
Purchase Controller (Ship Construction)	$2,900 to $3,500	Recruiting Circ. 28
Economic Analyst	$2,600 to $6,500	Recruiting Circ. 56
Foreign Country Analyst	$2,600 to $6,500	Recruiting Circ. 21
Transportation Analyst	$2,600 to $5,600	Recruiting Circ. 23
Industry Analyst	$2,600 to $6,500	Recruiting Circ. 50
Commodity Standards Specialist	$2,600 to $5,600	Recruiting Circ. 51
Production Specialist	$2,600 to $6,500	Recruiting Circ. 45 (Revised)
Production Executive	$4,600 to $8,000	Recruiting Circ. 20

Positions Requiring Specific Technical

Junior Aeronautical Inspector (Trainee)	No. 202 (1942), Unassembl
Maintenance Supervisor	No. 156 (1941), as amende
Ground School Supervisor	No. 152 (1941), as amende
Flight Supervisor	No. 151 (1941), as amende
Air Carrier Inspector (Operations)	No. 140 (1941), Unassembl
Link Trainer Operator	No. 126 (1941), Unassembl
Aircraft Inspector (Factory) and Associate Air Carrier Maintenance Inspector	No. 75 (1940), Assembled

supervision in aviation service schools.

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nd practices related to air safety.

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motion picture, trade and industrial.
of accounts of manufacturing concerns.
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price, labor market, economic.
eral, Roentgenology, surgery.

ion programs in defense areas.

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r physics (6 hours).
ept as experience may be substitutes

. courses in radio may be substituted

T. course in telephone or radio work.
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or in part, as stipulated in the

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mathematics, embracing differential and
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accepted.
year for year, for this requirement.
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nded	2 grades, $3,200 to $3,500
nded	2 grades, $3,200 to $3,500
nded	2 grades, $3,200 to $3,800
mbled	2 grades, $3,500 to $3,800
mbled	2 grades, $2,900 to $3,200
ed	1 grade, $2,900

Medical Officer	No.130 (1941), Unassembled[o]	3 grades, $3,200 to $4,600	Aviation medicine
Physician	No.211 (1942), Unassembled[o]	1 grade, $4,000	District physicia
Pharmacologist and Toxicologist	No.186 (1942), Unassembled[o]	4 grades, $2,600 to $4,600	Testing drugs; re
Veterinarian	No.143 (1941), Unassembled[o]	2 grades, $2,000 to $2,600	Sanitary inspecti
Nursing Education Consultant	No.250 (1942), Unassembled	4 grades, $2,600 to $4,600	Assistance in adm
Public Health Nursing Consultant	No.225 (1942), Unassembled[o]	5 grades, $2,600 to $5,600	To coordinate, su
Staff Dietitian	No.44 (1941), Unassembled[o] and Recruiting Circ.15	1 grade, $1,800	To direct or supe
Majors in the Social Sciences and Public Administration			
Economist	No.118 (1941), Unassembled[o]	5 grades, $2,600 to $5,600	To plan, direct,
Geographer	Recruiting Circ. 74(1942)	Various, $2,000 to $5,600	Study of foreign
Public Opinion Analyst	Recruiting Circ. 24(1942)	Various, $2,000 to $5,600	Analysis of press
Attorney (Junior Grades)	No. 245 (1942), Assembled	4 grades, $1,800 to $3,200	Junior grades of
Consultant in Public Assistance	Recruiting Circ. 75(1942)	Various, $2,600 to $4,600	Planning, consulta
Personnel Officer	No. 243, and R.C.52 (1942)[x]	Various, $2,600 to $6,500	Work in various f
Administrative Analyst	Recruiting Circ.14 (1942)[x]	Various, $2,600 to $6,500	Options include:
Executive or Administrative Officer	R.C. 17, Revised (1942)[x]	Various, $2,600 to $8,000	To serve as execut
Other Majors			
Architect	No.222 (1942), Unassembled[o]	2 grades, $2,000 to $3,200	In connection with
Physiotherapy Aide	No.24 Revised, Unassembled[ow]	2 grades, $1,620 to $1,800	To administer mass
Student Physiotherapy Aide	No.117 (1941), Unassembled[os]	2 grades, highest $1,440	To receive trainin
Occupational Therapy Aide	Recruiting Circ. 29 (1942)[y]	2 grades, $1,620 to $1,800	To administer occu
Junior Professional Assistant	No.251 (1942), Assembled[sz]	1 grade, $2,000	Many forms of serv administration

o - Listed as "Open continuous."
s - Students in Senior year are eligible, for acceptance upon completion of college course.
t - Open until December 31, 1942.
u - Experience may be substituted for the required education, year for year, up to 2 years.
v - Formal education not required; but a 4-year college degree course in communications engineering may be substituted in full for required experience for the lowest grade.
w - Graduation from approved condensed course in a school of physiotherapy is sufficient.

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Positions in Nursing and Related Occupations

Public Health Nurse	No. 242 (1942) Unassembled	1 grade, $2,000
Junior Public Health Nurse	No. 240 (1942) Unassembled	1 grade, $1,800
Graduate Nurse	No. 242 (1942) Unassembled	1 grade, $1,800
Junior Graduate Nurse	No. 88 (1941), as amended	1 grade, $1,620
Dental Hygienist	No. 111 (1941) Unassembled	1 grade, $1,620

United States

Atlanta, Ga.,
Boston, Mass.
Chicago, Ill.
Cincinnati, O
Denver, Colo.
New York, N.Y
New Orleans,

ne required[m]	Instructional duties under direct supervision in aviation service schools.
ne required[m]	Instructional duties in one of six optional branches.
years engrng. or tech.[n]	Instructional duties in one of eleven optional branches.
college required[m]	Safeguarding military information and property from theft, sabotage.
college required[m]	Confidential work involving travel and conferring with all types.
ne required	Investigating aircraft accidents and practices related to air safety.
years of college[p]	General subprofessional work in some branch of engineering.
years of college[q]	3 options: Diversified techniques, motion picture, trade and industrial.
college required[m]	Analyses, inspections and surveys of accounts of manufacturing concerns.
years of accounting[r]	Canvass for delinquent internal revenue; instruct and assist taxpayers.
llege not required[m]	Analyses: Industrial, commodity, price, labor market, economic.
college required[m]	Laboratory work in 3 options: General, Roentgenology, surgery.
llege not required[m]	Plan and coordinate group recreation programs in defense areas.

g - 1-year college course in engineering, or a 2-year college course including mathematics through trigonometry (6 hours), and chemistry and/or physics (6 hours).
h - At least 18 hours in college organic chemistry, except as experience may be substitutes for as much as 9 hours of such credit.
i - Varies with experience; and completion of E.S.M.W.T. courses in radio may be substituted
j - Certain types of experience may be substituted.
k - Must have included courses in radio, or an E.S.M.W.T. course in telephone or radio work.
m - For these examinations the principal basis of rating is practical experience rather than education, but substitutions are permitted in whole or in part, as stipulated in the full texts of the examination announcements.
n - May have been in school of engineering, industrial arts college, or school of technology. 4-year college course including course in motor transportation is also satisfactory.
p - In engineering. Must include as much as 8 hours in mathematics, embracing differential and integral calculus; 6 hours in physics; and 6 hours in technical subjects in any branch of engineering except chemical. E.S.M.W.T. courses are accepted.
q - Specified practical experience may be substituted, year for year, for this requirement.
r - In a residence school of accountancy; not necessarily a recognized college university.

Positions Requiring Specific Technical Aeronautical Experience

Junior Aeronautical Inspector (Trainee)	No. 202 (1942), Unassembled	1 grade, $2,600
Maintenance Supervisor	No. 156 (1941), as amended	2 grades, $3,200 to $3,500
Ground School Supervisor	No. 152 (1941), as amended	2 grades, $3,200 to $3,500
Flight Supervisor	No. 151 (1941), as amended	2 grades, $3,200 to $3,800
Air Carrier Inspector (Operations)	No. 140 (1941), Unassembled	2 grades, $3,500 to $3,800
Link Trainer Operator	No. 126 (1941), Unassembled	2 grades, $2,900 to $3,200
Aircraft Inspector (Factory) and Associate Air Carrier Maintenance Inspector	No. 75 (1940), Assembled	1 grade, $2,900

Medical Officer	No.130 (1941),Ur
Physician	No.211 (1942),Ur
Pharmacologist and Toxicologist	No.186 (1942),Ur
Veterinarian	No.143 (1941),Ur
Nursing Education Consultant	No.250 (1942),Ur
Public Health Nursing Consultant	No.225 (1942),Ur
Staff Dietitian	No.44 (1941), Ur and Recruitin

Majors in the Social Sciences and Public Administration

Economist	No.118 (1941),Ur
Geographer	Recruiting Circ.
Public Opinion Analyst	Recruiting Circ.
Attorney (Junior Grades)	No. 245 (1942),
Consultant in Public Assistance	Recruiting Circ.
Personnel Officer	No. 243,and R.C.
Administrative Analyst	Recruiting Circ.
Executive or Administrative Officer	R.C. 17, Revised

Other Majors

Architect	No.222 (1942),Ur
Physiotherapy Aide	No.24 Revised,Ur
Student Physiotherapy Aide	No.117 (1941),Ur
Occupational Therapy Aide	Recruiting Circ.
Junior Professional Assistant	No.251 (1942),

o - Listed as "Open continuous."
s - Students in Senior year are eligible, for acceptance
t - Open until December 31, 1942.
u - Experience may be substituted for the required educa
v - Formal education not required; but a 4-year college engineering may be substituted in full for required
w - Graduation from approved condensed course in a schoo

Positions in Nursing and Related Occupations

Public Health Nurse	No. 242 (1942) Unas
Junior Public Health Nurse	No. 240 (1942) Unas
Graduate Nurse	No. 242 (1942) Unas
Junior Graduate Nurse	No. 88 (1941), as a
Dental Hygienist	No. 111 (1941) Unas

),Unassembled[o]	3 grades, $3,200 to $4,600	Aviation medicine; cardiology; general public health; and 12 additional options.
2),Unassembled[o]	1 grade, $4,000	District physician in the Panama Canal Zone.
2),Unassembled[o]	4 grades, $2,600 to $4,600	Testing drugs; research in drug effects by use of experimental animals and otherwise.
),Unassembled[o]	2 grades, $2,000 to $2,600	Sanitary inspection of food animals, processing plants, meats and dairy products.
2),Unassembled	4 grades, $2,600 to $4,600	Assistance in administration of federal subsidies for training of nurses; inspection.
2),Unassembled[o]	5 grades, $2,600 to $5,600	To coordinate, supervise, or advise and demonstrate concerning public health nursing services.
, Unassembled[o]	1 grade, $1,800	To direct or supervise food service and perform dietetic and nutritional work in hospitals.
uiting Circ.15		
ion		
1),Unassembled[o]	5 grades, $2,600 to $5,600	To plan, direct, or conduct professional economic research in one or more specialized branches.
Circ. 74(1942)	Various, $2,000 to $5,600	Study of foreign areas critically concerned in defense or post-war planning.
Circ. 24(1942)	Various, $2,000 to $5,600	Analysis of press reports, radio broadcasts, motion pictures, and activities of organizations.
42), Assembled	4 grades, $1,800 to $3,200	Junior grades of professional work in the service of various governmental agencies.
Circ. 75(1942)	Various, $2,600 to $4,600	Planning, consultation, and research in federal and state administration of public welfare.
R.C.52 (1942)[x]	Various, $2,600 to $6,500	Work in various fields of personnel administration as head or member of a personnel division.
Circ.14 (1942)[x]	Various, $2,600 to $6,500	Options include: Management and Procedural analysis; budget and fiscal administration.
vised (1942)[x]	Various, $2,600 to $8,000	To serve as executive head or administrative assistant to the head of an agency or subdivision.
2),Unassembled[o]	2 grades, $2,000 to $3,200	In connection with construction projects, 3 options: Design, specification, estimating.
ed,Unassembled[ow]	2 grades, $1,620 to $1,800	To administer massage, electrotherapy, actinotherapy, hydrotherapy, and remedial exercise.
1),Unassembled[os]	2 grades, highest $1,440	To receive training intended to lead to promotion to the grade of Physiotherapy Aide.
Circ. 29 (1942)[y]	2 grades, $1,620 to $1,800	To administer occupational therapy to patients in a wide variety of industries and arts and crafts.
2), Assembled[sz]	1 grade, $2,000	Many forms of service, among which are those involving training in public administration, business administration, library science, economics, statistics, and mathematics through calculus.

ance upon completion of college course.

ducation, year for year, up to 2 years.
ege degree course in communications
red experience for the lowest grade.
chool of physiotherapy is sufficient.

x - Formal education not required. Progressively responsible full-time paid experience in administrative work in public or private employment is the principal requirement; but for the lowest grade, undergraduate education may be substituted in part.

y - For the lowest grade, study in a school of occupational therapy, or experience, is sufficient.

z - Open until August 27, 1942. This examination is opened and closed usually at intervals of a few months. It serves as a portal through which college graduates in many fields who look forward to careers in public service may become eligible for appointment.

Unassembled	1 grade, $2,000
Unassembled	1 grade, $1,800
Unassembled	1 grade, $1,800
as amended	1 grade, $1,620
Unassembled	1 grade, $1,620

United States Civil Service District Offices are located as follows:

Atlanta, Ga., New Post Office Bldg.
Boston, Mass., Post Office and Courthouse Bldg.
Chicago, Ill., New Post Office Bldg.
Cincinnati, Ohio, Post Office Courthouse Bldg.
Denver, Colo., New Customhouse
New York, N.Y., Federal Bldg., Christopher St.
New Orleans, La., Customhouse
Philadelphia, Pa., Customhouse, 2nd & Chestnut
Seattle, Wash., Post Office Bldg.
St. Louis, Mo., New Federal Bldg.
St. Paul Minn., Post Office and Customhouse
San Francisco, Cal., Federal Office Bldg.
Winston-Salem, N.C., Nissen Bldg.

Africa's Tough, Cokeless, but D. C. WAC Likes It

Here are some of the things that may confront a WAC overseas, as detailed by Lieut. Margaret Hartnett of Washington, now attending Intermediate Officers' School at Daytona Beach, Fla.:

Enemy bombardment and sniping.

Shortage of water, primitive living conditions, half-starved civilians seeking aid, wretched children.

The nerve-wracking din of conflict rolling very close.

A working day of from 12 to 14 hours six days a week, and sometimes a 24-hour shift.

Lieut. Hartnett went to North Africa as a non-com a year ago. She returned in October to attend Officers' Training School at Ft. Oglethorpe, Ga., and from there was transferred to Daytona.

And what's her reaction to the hardships and perils of service on the war front?

She wants to go back as soon as possible. But she did miss her cokes.

MARGARET HARTNETT
She's a lieutenant now

BRITISH WAC GROUP IN HUSH-HUSH JOBS

N. Y. Times

U. S. Army Assigns Arrivals to Military Intelligence Where Secrets Are Kept

12-2-43

LONDON, Nov. 15 (AP) (By Mail)—The United States Army isn't afraid that women cannot keep a secret.

The Army is demonstrating this by assigning recently arrived Wacs as map-makers, translators, file clerks and secretaries, to the military intelligence section—more commonly known as G-2—which is the very hush-hush branch of the service.

One of the jobs of this section is to find out what the enemy is up to—how, when, where and why Adolf Hitler is moving troops. To it go reports on the morale of American troops. It is concerned with security, and censorship is one of its tasks.

To it come reports—reports that Wacs are filing—on how strongly Hitler has fortified the western European coast. It is concerned with information of any new weapons of the enemy.

It is quite likely that a few important high-ranking officers in G-2 know the answer to that question that is giving Hitler nightmares: "When and where will the Allies invade the European fortress?"

Thus it can be seen that Wacs selected for work in G-2 must have a little extra on the ball in intelligence, discretion and in a sense of responsibility. There must be no doubt of their loyalty. Their assignments are a personal honor.

They have convinced men Army officers of their trustworthiness and ability. One lieutenant colonel at headquarters, whose name cannot be given, said he had been against the use of Wacs at first. "But now I wish we had more."

Lieut. Ruth Sawyer of Hastings-on-the-Hudson, N. Y., replaced a man officer in charge of personnel. She is the daughter of Dr. and Mrs. W. A. Sawyer.

Outside one door there is a special prominent bell with a notice "ring bell for admittance." Presumably that gives those within time to roll up maps and hide secret papers. A Wac opens the door.

The walls of many of the rooms in which the girls are working are covered with maps and charts. There are also diagrams showing how to recognize the military uniforms of the enemy.

There are a number of Wacs in the message center, where highly important cables, telegrams and messages, come and go.

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By ORVILLE PRESCOTT

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Christian Science Monitor, 3/10/43

Real Army Discipline Looms Ahead for Waacs

By a Staff Correspondent of The Christian Science Monitor

WASHINGTON, March 10 — Even the Army can change its mind about women.

A year ago, Army officers prevailed upon Congress to make the Woman's Army Auxiliary Corps what it's name says—an auxiliary rather than a part of the Army.

Now, chiefly because of discipline problems that have arisen, they are asking that women be allowed to serve "in" the Army rather than merely "with" it.

The Waves, Spars and Marine reserves are actually parts of those corps, though they have not yet acquired full military status, either, since they are prohibited by law at present from going overseas.

A bill that already has passed the Senate and is now under consideration by the House Military Affairs Committee would subject the WAACS to stiffer discipline if they go "A. W. O. L." or otherwise infringe Army regulations and also would allow them to file disability claims on a military rather than a civilian employee basis.

Limitations Planned

Specific restrictions probably will be included in the bill to prevent Waacs from obtaining allowances for dependents as soldiers do and to keep them from commanding troops in combat. The Waacs at present have a regulation against enrolling women with dependents.

Director Oveta Culp Hobby of the WAAC told the House Military Affairs Committee yesterday that she did not want them to think that discipline was a problem with the WAAC, but admitted it could be improved if the women were subjected to real army penalties.

Blanketing of the Waacs into the Army will mean that Mrs. Hobby, now called "Director," will get a real Army rank. At present she gets the pay of Major and wears the silver eagles of a Colonel.

Waacs Face Danger

One of Mrs. Hobby's chief arguments for equal disability benefits for women and their beneficiaries was the fact that Waacs already have been torpedoed going overseas. She herself was wearing her first decoration—a European theater of operations ribbon—awarded for her trip to England last fall.

She told the Committee that 43,682 Waacs have enlisted since the corps was formed early last summer, 14,000 of whom already are in the field and 202 overseas. The overseas contingent is with Gen. Dwight Eisenhower in North Africa. They are English, French and Spanish-speaking telephone operators and stenographers.

Foes Snipe U. S. by Loop

Continued from Page 1

sion of persons engaged in acts of secret warfare is a duty which every loyal resident of the United States, of course, carries out voluntarily. The statute is directed only at that small group of persons who are not sufficiently loyal to their country during time of war to report such information.

Although there appears to be no doubt that the House will approve the War Security Act quickly, there is evidence that Senator Burton K. Wheeler (D) of Montana, who has been frequently heckling the Justice Department for the indictments of sedition it has obtained from two different grand juries against an assorted group of Americans, is preparing to muster all the opposition to the proposed law he can command.

Reasons for Opposition

The reason which Senator Wheeler assigns to his opposition to the bill is that it is too vague, too loosely drawn, a threat to fundamental civil rights and could be a dangerous weapon in the hands of a reckless or unscrupulous prosecutor.

The fight in the Senate, if it develops as now expected, probably will be on this ground, at least openly, although the unanimous judgment of the House Judiciary Committee, headed by the cautious, conservative Representative Hatton W. Sumners (D) of Texas that the new law is both careful and urgently needed would appear to draw a good deal of the substance from this criticism.

The fact is that the powers granted under the War Security Act are more sharply defined and in a legal sense more circumscribed and safeguarded than those of any comparable statute now on the books. These limitations are:

Several Weaknesses

1. It is operative only in time of war.

2. With one exception, there can be no violation unless an overt hostile act can be proved.

3. Even such overt hostile acts do not constitute violation unless it can be proved that they were done with specific intent to aid the enemy. It is not sufficient to show that the effect of the hostile act was to aid the enemy; it must be proved in every case that the act was intended to aid the enemy.

The bill provides swift and substantial punishment, lack of which is one of the glaring defects of the present laws.

Section 103 of the new act is considered one of the most important additions to the nation's security legislation. It provides penalties against "acquiring or possessing of any money, weapon, explosive, means of communication or transportation" or property with the intention of using it to aid the enemy.

For example, despite their care-

HAIR and HATS

Have your hair beautifully dressed, then have a *Hat* designed to fit that Hair-do, and if you have a good outmoded *hat* bring it in and we will restyle and refresh

DIVISION OF
PRESS INTELLIGENCE
1526-14th St., N. W.

NO. ______________

SYMBOL L

Star-Ledger (I)
Newark, N. J.

DATE JUN 12 1943
p.

the EDITOR'S OPINION

Hitler's Dirty Work

Of all the many problems facing the American people in the war, the greatest and most trying is that of manpower shortage. This problem apparently cannot be solved unless women come forward to supply the lack in manpower.

We Must Look To Women

The Army is expected shortly to extend the draft age, and the older men are to be used to fill non-combatant places. This, it is reported, is due to the failure of women to come forward in sufficient numbers to join the Waacs.

Recruiting for the Waacs has, from time to time, had the serious consideration of Nazi propaganda agents. Most of us have heard nasty stories reflecting on the character of Waacs, but many of us may not realize that these stories were inspired by Nazi rumor mongers who know too well how many evil-minded lovers of gossip there are to give their energetic help to any enterprise likely to undermine a woman's reputation.

The Nazis, since the start of the war, have capitalized this weakness in human character for bearing false witness. When the French armies were stationed behind the Maginot Line, the Nazis broadcast lying stories giving actual names of service men's wives who were represented as having immoral relations with well known townsmen. When the British ora woman's reputation.

The Nazis, since the start of the war, have capitalized this weakness in human character for bearing false witness. When the French armies were stationed behind the Maginot Line, the Nazis broadcast lying stories giving actual names of service men's wives who were represented as having immoral relations with well known townsmen. When the British organized women into auxiliaries for the armed services, the Nazis proceeded to plant gossip reflecting on the moral character of the volunteers. And when our country began to recruit women, the Nazis naturally obliged with the same kind of campaign.

It's Easy To Tear Reputations

This filthy propaganda is difficult to contend with under any circumstances because of the many gossips of both sexes in our midst who find their greatest enjoyment in tearing innocent reputations apart, but it becomes even more difficult to contend with when a newspaper of vast circulation unwittingly spreads some of the worst of these reports in its columns. Yet the New York News in its issue of last Tuesday did just that in a Washington report. The story published by the New York News could not have done much more to discourage recruiting if it had been calculated for that purpose.

Fortunately, it is an easy matter to prove that the story was untrue. Contrary to the impression produced by the New York News story, every effort is made in the recruiting and training of Waacs to reject candidates of light virtue and to insist upon high moral standards.

Waacs Should Ignore Gossipers

Some Waacs have been known to react rather hysterically to the published reflections on their character, feeling that their uniform has been painted as a sign of dishonor. This reaction, fortunately is not general. Most of the Waacs are girls of better than average intelligence who understand that the only answer to malicious tongues and leering smiles is a chin-up, undiverted attention to duty. If any of the Waacs need any consolation, they can find it in the fact that the gossip-mongers are quite impartial and indiscriminate in choosing victims for their character assassination and do not exempt women who stay at home from their tongue-wagging.

IT

ng Hilda's cowbell out in
es a piece of his mind . . ."

words. They're from Pete
'. F., Reiser—and he added,
Persia he missed "all the
ıll club in the world."

s complaining about his
's a soldier now, and a
out of the letter as an
odger, always a Dodger"

eplacement training center
t to Master Sgt. Joseph J.
stationed in Persia. The
oeger, Centaur third base-
d baseball in general.
The true tone of the letter

e are really proud of the

ting, it's an entirely new
we're all in it for, it makes

that "it looks very much
al League and it'll be a
ooklyn team against the
ls. Personally, I am for
Louis is my hometown."
ave a pretty good ball club
he roster—Frank Crespi of
, Ken Heintzelman of the
nd Browns.

second no-hitter last we
again last night and th
seizing the league leader
from Toronto by notchir
6-3 victory over the Leaf
the opener of a five-game
The triumph reduced
ronto's grip on first plac
two and a half games.

All the runs of the twilight
counter were scored in the
three innings—upsetting the
vance forecast of a tight due
tween Ken Holcombe and
Strincevich—and the blow that
the story was a three-run h
delivered by Don Savage in the
inning with two out. The r
tripper, climaxing a four-run
rage, was the fifth of the cam
for the former Bloomfield High
and his third in as many ga
His prodigious socking has
counted for nine RBI's in the
three games, raising his tota
the season to 23, which leads
Newark club.

Savage's homer was only o
nine safeties the Bears racke
off the combined shoots of Str
vich and Lloyd (Gimpy) B
who pitched for Newark bac
1922. Strincevich gave up sev
the blows in the first three in
in going down to his second d
of the year. The former
pitcher has seven victories t
credit, one at the expense o
former club, and three shut
Gene Corbett and Ed Levy
nominal leaders of the Newark
rage with two singles apiece.

Jim Davis, bespectacled
hander, eventually took credi
the triumph, but he needed
Ananicz's assistance toward
finish. Davis replaced Holcom
the third with one out, on
already across and two Lea
base. He loaded the bases b
ting the next batter but got

ELSE, LEO STILI
ERS VERBALLY

SAME TRICK HELI
CLUB 2 YEARS AG
AND MAY AGAIN

lected and shipped to soldier
sailors and Marines all ove
world. A total of 508 doze
distributed in this manner

ELSE, LEO STILI
·ERS VERBALLY

.EO DUROCHER

ıseball left in him. He's
·etty good care of himself,
ı he quit playing regularly
ıore from a personal desire
tion than an inability to
cake any more.

ıt 38, he carried lead where
to be feathers, and his
whine where they used to
ut he always did have a
ɪf outguessing a baseball.
~~ed to~~ instinctively know
was going to be hit, mov-
e to await it. And he was
he best at getting the ball
ɪt. His arm might be weak,
ill has speed.

IN PINCH

ver was more than a sev-
·t hitter, but he's a tough
clutch. He'll get on base
ɪy, and that's the general

be interesting to see how
stays in there, and to note
ınes of the club during his
e'd guess they wouldn't be

---

al League prexy Ford
perturbed over the foul ball
as it pertains to the major
policy of supplying base-
service organizations.

ear the fans were asked to
·k all balls hit into the
and these balls were col-

SAME TRICK HELI
CLUB 2 YEARS AG
AND MAY AGAIN

lected and shipped to soldier
sailors and Marines all ove
world. A total of 508 dozei
distributed in this manner.

This year, with the same p
operation, the total will be
to hit the 200-dozen mark
present rate. Not that the
don't want to cooperate. It'
that they have acquired he
of tossing the ball to the n
man in uniform, a practice
defeats the purpose of the
The balls so disposed of go
dividuals, usually stationed in
ropolitan areas, and never
camp.

Haledon Ni
In Tourney

Farmers First Nii
To Be Certified
In Semi-Pro Play

TRENTON (AP) — The Pro
Farmers of Haledon are th
team certified for entrance
1943 New Jersey state se
baseball tournament by th
tional Semi-Pro Baseball Co
State Semi-Pro Commissioner
G. Johnson said yesterday.

Fifty teams in leading se
leagues have been invited to
for certification in the New
tourney, to be held at Pert
boy from July 15 to Aug. 1,
said. A few outsanding clı
be certified directly to the
ment, he asserted, and othe
will compete in district elim
for places on the state com
entry list, limited to 16 tea

The Trenton Carlins, ch
last year, and the Fort Di
post team, second in 1942, ar
the clubs invited, Johnson

ɡht Colleges to Comp
Yacht Cup Races Toda

**EW LONDON, Conn. (AP)—Eight colleges are expecte
ented in the Intercollegiate Yacht Racing Association's
inary series for the McMillan Cup championship on the
today and tomorrow.**

**ıtries are Coast Guard Academy, Brown, Dartmouth,
T., Northeastern, Williams and Michigan.**

**he four crews finishing at the top of the two-day ra
y for the cup finals at Marblehead, Mass., June 20 and
U. S. Naval Academy and Haverford qualifiers in
ıinary at Annapolis last week-end.**

artmouth is the defending champion.

e Star-Ledger Tomorro

American Women ARE MARCHING ON TO VICTORY

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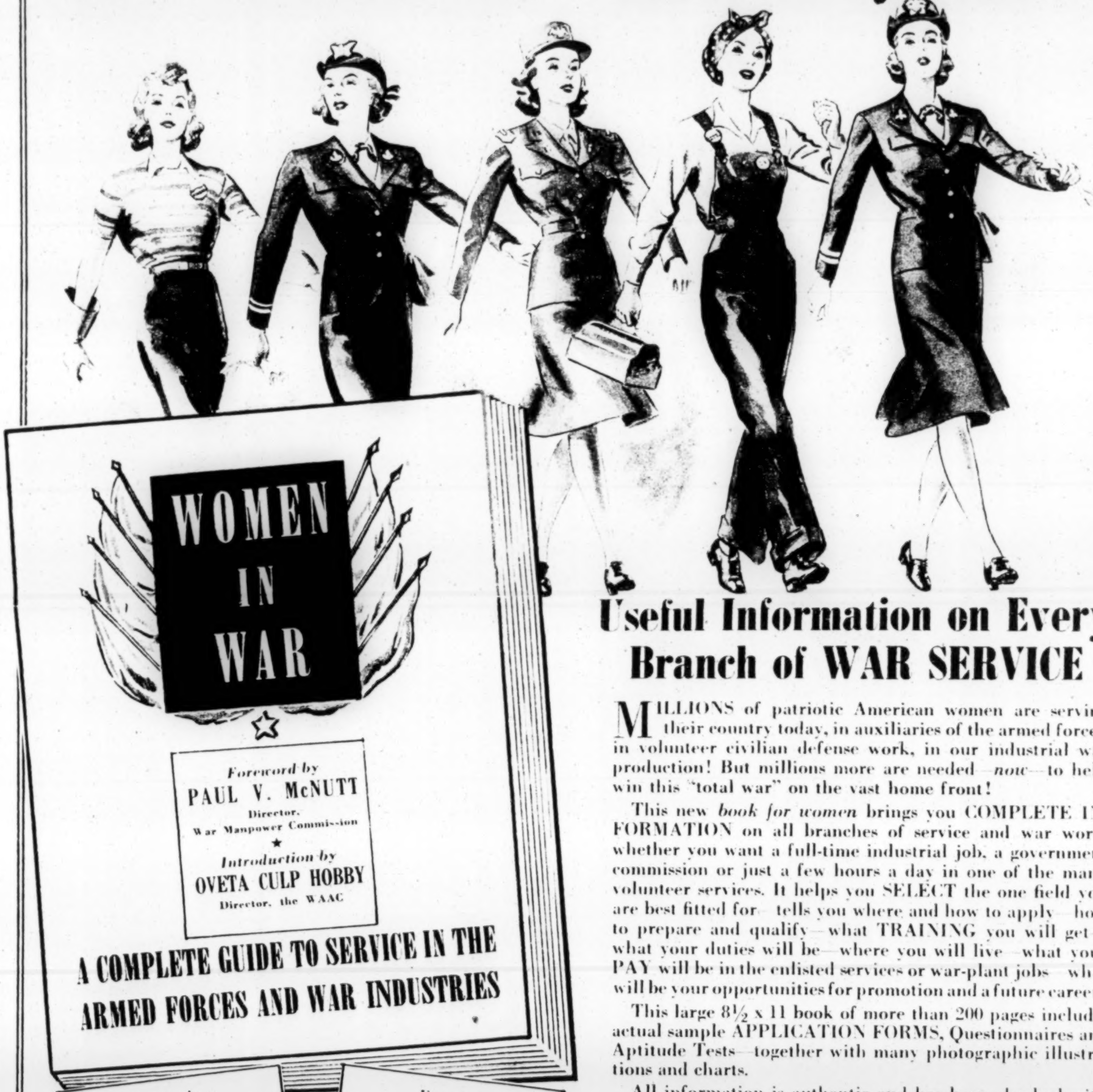
HOW TO PREPARE • HOW TO QUALIFY


WOMEN IN WAR
Foreword by
PAUL V. McNUTT
Director, War Manpower Commission
Introduction by
OVETA CULP HOBBY
Director, the WAAC
A COMPLETE GUIDE TO SERVICE IN THE ARMED FORCES AND WAR INDUSTRIES

ANSWERS ALL YOUR QUESTIONS

and Includes

Actual Enlistment & Application Forms, Questionnaires, Aptitude Tests—Many Charts and Photographic Illustrations

★

How to Enlist in the

WAAC

Complete and reliable information about the Women's Army Auxiliary Corps, famous volunteers who are releasing thousands of men for combat. Actual sample application forms, questionnaire, and photos of WAACS.

WAVES

How to apply for service in the Women's Appointed Voluntary Emergency Service (Navy Auxiliary). Official information complete with instructions for using application form reproduced in this book.

SPARS

The Women's Reserve of United States Coast Guard (named from the motto "Semper Paratus") is the new Coast Guard auxiliary, fully described, with information for volunteers.

ANC

Qualifications are explained for enlistment in the Army Nurses Corps and the Navy Nurses Corps—two of the services that appeal to the most courageous of American women.

WAFS

The Women's Auxiliary Ferrying Service has called for fewer volunteers because fewer women are eligible to pilot aircraft, but full description of this vital service is included.

INFORMATION on all enlistment services includes: Who is eligible? Where will you live? What training required? What duties assigned? What pay? Promotions and the future. Definite instructions on HOW TO APPLY.

★

How to Join the

RED CROSS

Special Wartime Services of the American Red Cross are listed and explained, in many phases of important war-work, telling where and how to apply, and varieties of training.

AWVS

Nationwide activities of the American Women's Voluntary Services are described, including motor service, food, education, workshops, the Junior Auxiliary, the legal bureau and many other volunteer services.

OCD

The popular Civilian Defense Corps has attracted many thousands of women in towns and cities everywhere, including your community! Read about the Drivers Corps, Messenger Service, Air Raid Wardens, Medical Auxiliaries, Emergency Food Corps, Air Raid Filter Centers, many other phases, with information where and how to apply and training.

OTHER SERVICES are included in this comprehensive guide and manual, such as the Citizens Service Corps, Home Conservation Corps, American Women's Hospital Reserve Corps, etc.

ARMY and NAVY CIVIL SERVICE.—Many thousands of women are now employed in civil service attached to the Army and Navy. Thousands more are needed! Learn the types of work, where located, salaries, professional rating, training schools, etc., relative to wartime Civil Service!

★

How to Apply for

INDUSTRIAL WAR JOBS

Here is a comprehensive, complete and authentic outline of every training program and facility now available to women. It gives you the step-by-step procedure for getting a war job—*your* job in the Chemical, Shipbuilding, Aircraft, Instrument, Ordnance, Ammunition and many other Industries. Details regarding machine operators, assembly work, sheet-metal, riveting, welding, inspection, factory service, painting, packing and labeling, scores of other important jobs!

From the
FOREWORD by
PAUL V. McNUTT
Director,
War Manpower Commission

"Every American has a part in this total war. What each one wants to know is where and when and how...she can serve the best....This book sets forth...the problems we face. I hope that this statement of these problems will help American women understand their part in the war for freedom."

From the
INTRODUCTION by
OVETA CULP HOBBY
Director, the WAAC

"Every WAAC that is assigned to duty means another American soldier released for action. . . . Some of these jobs these men are doing—jobs that you, as a WAAC, can do—are outlined in 'Women in War.' . . . You will find the list in 'Women in War.' You will find the job you will do best and you can fill that job now!"

Don't wait to be called!

Millions of Women are Needed NOW!

Useful Information on Every Branch of WAR SERVICE

MILLIONS of patriotic American women are serving their country today, in auxiliaries of the armed forces, in volunteer civilian defense work, in our industrial war production! But millions more are needed—*now*—to help win this "total war" on the vast home front!

This new *book for women* brings you COMPLETE INFORMATION on all branches of service and war work, whether you want a full-time industrial job, a government commission or just a few hours a day in one of the many volunteer services. It helps you SELECT the one field you are best fitted for—tells you where and how to apply—how to prepare and qualify—what TRAINING you will get—what your duties will be—where you will live—what your PAY will be in the enlisted services or war-plant jobs—what will be your opportunities for promotion and a future career!

This large 8½ x 11 book of more than 200 pages includes actual sample APPLICATION FORMS, Questionnaires and Aptitude Tests—together with many photographic illustrations and charts.

All information is authentic and has been checked with governmental departments. The book contains a *Foreword* by Paul V. McNutt, Chairman, War Manpower Commission, and an *Introduction* by Oveta Culp Hobby, Director, the WAAC. "Women in War" is a big, important book—a storehouse of useful information—that will help you to act at once and start *now* to do your part for a United Nations VICTORY!

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MALAY

*(American and British pronunciation)

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'Grand Old Minstrel'

By Sam L. McKinlay

GLASGOW.

NONE of the songs of this war can compare with "Tipperary," "Over There" and others that the fighting fathers of today's fighters sang a generation ago. Such is the opinion of Sir Harry Lauder, "that grand old minstrel," as Winston Churchill recently described him, who in this war as in the last is singing to soldiers, sailors and airmen.

Sir Harry is today hale and hearty, despite his 72 years. In World War I he sang for the soldiers in camps, barracks, garrison theatres, and even at concerts just behind the front line in France. In World War II he gave his first concert in Glasgow on Sunday, Oct. 23, 1939. Sir Harry has the good Scot's reverence for the Lord's Day, but, as he said, "If the forces can fight on Sunday, I can sing on Sunday."

And hardly a Sunday has passed in the last three years without his appearing on some platform to cheer the soldiers with song and pawky drollery. He does not pick his platforms. He is equally happy to sing in Glasgow's great St. Andrew's Hall to an audience of 4,000, or in a tiny town hall in a mining center, or in a pavilion to an audience of allotment holders who are selling their surplus produce for the Red Cross. In that time he has roamed the length and breadth of Scotland, scorning the rigors of the black-out, transport difficulties and vagaries of weather.

FROM his snug home, Lauder Ha', at Strathaven (pronounced Stray-ven), not far from Glasgow, he sets forth most nights in the week for his self-imposed war work, and he is still sturdy enough to prance his little steps on the stage and waggle his inevitable kilt—usually of the Maclennan tartan, which he has a right to wear because Maclennan was his mother's name and stands in the middle of his own. Indeed he thought of calling himself Maclennan Lauder—only (he said) "Harry Lauder sounded more homely."

They used to say, in the Scots phrase, that he was "overfond of the bawbees," and he told this on himself to prove it, but he is not grudging of his talent. His voice has not the power it had when he was the highest paid music hall artist in the world, but it is still rich and full, strong enough to make him disdain to use a microphone even in the largest auditorium. When he inaugurated a Garrison Theatre in St. Andrew's Hall, Glasgow, on Nov. 1, he put aside the microphone with a gesture as eloquent as the late R. B. Cunningham Grahame's, "take away that damned contraption." And then he had the audience singing the choruses of his songs as they have done for fifty years.

To Americans and others weak on Scottish terms, Sir Harry kindly explains that "brae" is a hill, "hoose" is a house, and so on. For he sings not only for British troops, but for Americans, Poles, Czechs and Norwegians. All the different nationalities agree on the kind of songs they prefer. "A song about home, a fighting song, and a love song —that's what they like, and that what I give them," he says.

"The soldiers like a love song, and I am always being asked to sing 'I Love a Lassie' and 'Roamin' in the Gloamin.' And, of course, they all like 'Loch Lomond,' and they all know the words."

"Broadcasting," Sir Harry said, "has had a rather unfortunate effect on popular songs. The new songs are extra good for their melody, and for their sentiment. But, the modern songs don't last. They are maybe too often on the wireless. You get tired of them easily because you can't avoid hearing them almost every time you switch on. And I think there are too many people singing them. Songs don't belong now to any particular singer. It was different in the last war, when singers were known by their songs."

Sir Harry Lauder

Sir Harry thinks, too, that the kind of war we are fighting today has a good deal to do with the kind of songs that are written. "There's not so much marching now," he said. "Mind you, the boys are marching all right, and they're fighting all right. But you don't need a song so much when you're sitting in a tank or a lorry or an armored car." "Or a jeep?" I suggested. "Aye, or a jeep," he laughed. "Maybe if there were more marching there would be more singing, and if there were more singing then some one would produce a good marching song. 'Roll out the Barrel' is a fine song, but you never hear it now."

SIR HARRY has not yet encountered any fighting song that the troops like better than old favorites, as "The Laddies Who Fought and Won," which wins full-throated approval from every type of audience. They also like the song Sir Harry starts off:

We can all look back to the history of the past
That has made us what we are.

A simple, straightforward sentiment like that is what soldiers want. Sir Harry thinks that the songwriters have not paid sufficient attention to this aspect of their work. Popular songs don't need to contain a declaration of war aims. But they must have something more than a catchy tune and a glib lyric.

Feb. 2, 1943.

WAACs
War Department,
Washington, D. C.

Letter from

Mrs. Lois C. Warner,
1291 Curtis St.,
Akron, Ohio

Mrs. Warner is employed as an assistant clerk, Selective Service Board No. 2, Akron, Ohio, Civil Service. She wants to know if it is possible to obtain a similar position under WAAC jurisdiction.

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AWARDS

Sept. 1, 1943 War Dept. Bureau of Public Relations Release

ARMY NURSE IS SECOND WOMAN TO RECEIVE SOLDIER'S MEDAL.

Award of the Soldier's Medal to Second Lieutenant Margaret M. Decker, Army Nurse Corps--the second woman ever to receive this award--was announced today by the War Department.

heroism

The medal was awarded to Liettenant Decker for herosim at Topaz, California, o June 19, 1943, when, according to the citation accompanying the award, while swimming in the Colorado River, without regard for her safety she went to the rescue of a soldier and saved him from drwoning. Though physically exhausted, Lt. Decker administered first aid to the soldier and accompanied him to a station hospital, where he was given medical attention.

Lt. Decker is assigned to the a27th Station Hospital, Desert Training Center, California. She is a daughter of Mrs. Llewellyn Decker, 38 Hill St., Pocakaway, N.J She entered the Army Nov. 19, 1942. She is a graduate of the St. Barnabas Hospital School of Nursing, Newark, N.J., in the class of 1938.

The first woman to win the Soldier's Medal, established in 1926, was Second Lt. Edith E. Greenwood, Army Nurse Corps, of North Dartmouth, Mass. She was given the award for saving her patients in a fire in a station hospital near Yuma, Ariz. on A pril 17, 1943.

A.F. of L. Weekly News Service, Sept. 14, 1943

A woman shipyard worker, Mrs. E. L. Norwood, received Honorable Mention for devising repair pliers which make repair jobs easier, quicker and safer.

WAR DEPARTMENT
Bureau of Public Relations
PRESS BRANCH
Tel. - RE 6700
Brs. 3425 and 3770

WOMEN'S BUREAU
DEPARTMENT OF LABOR

August 19, 1943

IMMEDIATE RELEASE

MEMBERS OF WAC TO BE ENROLLED IN ARMY-NAVY HOSPITAL SCHOOL

New opportunities have been opened to members of the Women's Army Corps for training and service in the Army Medical Department, the War Department announced today.

Beginning September 10, the first of more than 1000 members of the WAC will be enrolled in the Army-Navy Hospital School, Hot Springs, Arkansas, in military hospital training courses. Graduates will be assigned to duty at general and station hospitals.

Opening of this school to the WAC personnel is indicative of the training and service opportunities that will present themselves to members of the Women's Army Auxiliary Corps when that organization becomes a part of the Army of the United States on September 1.

Each WAC selected to attend the school will be given training in one of five courses. New classes will be started on the 10th day of each month.

Three of the courses, those for training X-ray technicians, are of three months' duration. For each of these 45 women will be selected initially.

Courses for training medical and surgical technicians are of two months' duration, for each of which 100 WACS will be selected initially.

The new field of training now opened to members of the WAC has heretofore been restricted to male military personnel.

END

DISTRIBUTION: Aa, Af, B, Da, Dm, N, WAC.

FUTURE RELEASE

PLEASE NOTE DATE

WAR DEPARTMENT
Bureau of Public Relations
PRESS BRANCH
Tel. - RE 6700
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FUTURE RELEASE

FOR RELEASE WEDNESDAY, A.M., APRIL 21, 1943

636 WAAC OFFICERS PROMOTED BY ARMY

Promotions of 636 officers of the Women's Army Auxiliary Corps were announced today by the War Department. Each of the 48 states, and the District of Columbia, is represented.

With today's promotion of 175 second officers (first lieutenants) to first officers (captains), the Corps of over 56,000 women now contains more than 250 first officers. New second officers, promoted from third officers, number 461, comparing with 487 who attained the second-officer rank when the first promotions were made on December 23, 1942.

Two WAAC officers, now overseas, received promotions on January 28. Zelma F. Hanson of Monterey Park, California, was promoted from a third officer to a first officer, and Dorothy L. Swart of Elsa, Texas, from a third officer to a second officer.

Promotions were made on the basis of recommendations from commanding officers. The WAAC officers are serving with WAAC companies which are taking over the work of enlisted men at Army camps in various parts of the country. They are assigned as leaders and teachers at the five WAAC Training Centers located at Fort Des Moines, Iowa, Daytona Beach, Florida, Fort Oglethorpe, Georgia, Fort Devens, Massachusetts, and Ruston, Louisiana; at the seven Army Administrative Schools in Texas, Arkansas and Kentucky; on the staffs of the commanding generals of the nine Service Commands and the Military District of Washington; and as recruiting officers in cities all over the country. The Fifth Training Center, with headquarters at Ruston, Louisiana, has sections also at Camp Polk, Louisiana, and at Camp Monticello, Arkansas.

Other officers are at WAAC Headquarters in Washington; at Army service schools; and serving as commanders of Aircraft Warning Service companies in the First Fighter Command and as liaison officers with the Army Air Forces.

The only member of the Corps who at present holds a rank higher than that of first officer is Director Oveta Culp Hobby, who wears the eagles of a colonel.

The promotions, listed by States, are:

MORE

WARREN ASKS CUT IN CALIFORNIA TAX

GovernorProposes$80,000,000 Slash in State Levies to Ease Load of Federal Increase

NEW LABOR BODY FORMED

Advisory Board Will Take Up War Problems—Railroads Call for Help on Manpower

Special to THE NEW YORK TIMES.

SAN FRANCISCO, Calif., March 15—State tax cuts exceeding $80,000,000 during the next biennium, the largest slash in the State's ninety-three-year history, have been recommended to the California Lefislature by Governor Earl Warren to help offset increased Federal taxation.

Asserting that his recommendation affected "every class of taxpayer," the governor propoosed reductions in sales, use, personal income and bank and franchise corporation taxes, effective July 1.

The sales tax would be reduced temporarily from 3 per cent to 2½ per cent and a 25 per cent war credit would be provided on bank and corporation franchise taxes. Exemptions on personal income taxes would be increased and a 25 per cent war credit would be granted.

On the basis of findings by the Citizens' Committee on Taxation the Governor also urged appropriation of $25,000,000 as a war catastrophe reserve and $33,000,000 for postwar construction of state buildings and institutions.

Other wartime developments of the day were creation of a regional labor advisory committee to help solve war labor problems and a request by four major Western railroads for aid from the California Railroad Commission in coping with the manpower shortage.

Formation of the labor committee, designed to deal with union worker activities in war industries, followed conferences in San Francisco, Los Angeles, Portland and Seattle attended by representatives of unions and the War Production

N.Y.T.
3/16/43

NURSE ENLISTMENT EXPECTED TO BOOM

Rise in Age Limit to 45 Years for Army Duty Regarded as Spur to Applicants

OLDER WOMEN WIN FAVOR

Those in Early Forties Best Fitted for Overseas Service, Says Recruiting Director

Official notification from Washington raising the age limit for nurses to 45 years for Army duty is expected to create a rise in enlistment here, the New York Chapter of the American Red Cross announced yesterday. Notification was given to headquarters here by Lieut. Col. Florence A. Blanchfield, acting superintendent for Army nurses. Previously the limit had been 40 years.

Forty-four applicants between the ages of 40 and 45 who had already applied to the New York Chapter for active Army duty were transferred yesterday from the Second Reserve to the First Reserve as a result of the order. This number represents one-fourth of the total enrollment since the drive opened Feb. 1.

Women of 40, 41, 42 and 43 will make a definite contribution toward active Army service, in the estimation of Miss Eleanor Lee, director of the Recruitment Center for the Army and Navy Nurse Corps for the Red Cross, New York chapter. When interviewed yesterday at its headquarters, 139 East Thirty-sixth Street, Miss Lee said, "Older women have the necessary experience for overseas duty."

Another group who can be spared are office nurses, according to Miss Lee. "With many of the doctors for whom they work entering the Army, their places can be taken by secretaries or nurses over the age limit."

Other classes of nurses vitally needed by the Army are those with operating room experience and those who know how to administer anesthesia.

Girls just out of nursing school are better off with a few years of training prior to going into active Army service, Miss Lee explained.

ALABAMA

NAME	HOME CITY	STATION
From 2nd Officer to 1st Officer:		
Alcesta F. Fowler	Jackson	Washington, D. C.
Melba Griffin	Montevallo	Ft. Oglethorpe, Ga.
Helen T. Walthall	Birmingham	New Orleans, La.
From 3rd Officer to 2nd Officer:		
Margaret D. Baldwin	Mobile	Ft. Oglethorpe, Ga.
Martha J. Cliff	Talladega	Daytona Beach, Fla.
Verna A. McCluskey	Mountain Brook	Ft. Oglethorpe, Ga.
Mary J. Norton	Birmingham	Ft. Bragg, N. C.
Elizabeth O. Ryland	Birmingham	Daytona Beach, Fla.
Nona Stokes	Abbeville	Daytona Beach, Fla.

ARIZONA

From 2nd Officer to 1st Officer:

Susan Faherty	Phoenix	Oklahoma City, Okla.

From 3rd Officer to 2nd Officer:

Helen C. Harris	Phoenix	Washington, D. C.

ARKANSAS

From 3rd Officer to 2nd Officer:

Dorothy E. Cooper	Arkadelphia	Charlotte, N. C.
June Everett	Little Rock	Daytona Beach, Fla.
Hope Harrin	Conway	Camp Monticello, Ark.
Delta A. Moore	Berryville	Daytona Beach, Fla.
Amber Moult	Little Rock	Kansas City, Kans.

CALIFORNIA

From 2nd Officer to 1st Officer:

Mary V. Donaldson	San Francisco	Ft. Douglas, Utah
Ruth F. Fowler	San Francisco	Washington, D. C.
Emily M. Hathaway	San Luis Obispo	Los Angeles, Calif.
Audrey Hollenback	Oakland	Daytona Beach, Fla.
Kathryn K. Johnson	Claremont	Ft. Leavenworth, Kan.
Geneva F. McQuatters	Ontario	New York, N. Y.
Geraldine P. May	Redwood City	Washington, D. C.
Mary E. Mies	Berkeley	Ft. Des Moines, Ia.
Mary M. Miller	Los Angeles	Los Angeles, Calif.
Anne E. Sweeney	San Francisco	Ft. Hayes, Ohio
Gretchen M. Thorp	San Francisco	Washington, D. C.
Lucile G. Van Bolt	Burlingame	Governor's Island, N.Y.
Harriette B. White	Los Angeles	Los Angeles, Calif.

From 3rd Officer to 2nd Officer:

Tessa D. Blasingame	Carmel	Daytona Beach, Fla.
Mary O. Bunce	Los Angeles	Miami Beach, Fla.
Dolores M. Christy	Albany	Washington, D. C.
Meryle M. Clymer	Los Angeles	San Francisco, Calif.
Joyce Cunningham	San Diego	Daytona Beach, Fla.
Jeannette C. Edwards	Los Angeles	Daytona Beach, Fla.
Barbara J. Gouvalas	Portola	Washington, D. C.

MORE

Helen M. Hannan	San Francisco	Ft. Des Moines, Ia.
Ethel F. Hoffman	Burlingame	Baltimore, Md.
Ruth J. Ihle	Los Angeles	Ft. Des Moines, Ia.
Venie L. Kellog	Pasadena	Washington, D. C.
Susan Stoll McCutchan	Hollywood	Ft. Des Moines, Ia.
Dorothy A. Mitchell	Modesto	Washington, D. C.
Bessie I. Neeley	San Francisco	Camp Monticello, Ark.
Louise M. Nielsen	San Gabriel	Daytona Beach, Fla.
Emma Fell Paxson	Berkeley	Daytona Beach, Fla.
Mary B. Robertson	Los Angeles	Camp Ruston, La.
Barbara E. Root	San Francisco	Camp Ruston, La.
Helen V. Sayre	Hollywood	Daytona Beach, Fla.
Vera A. Sievers	St. Helena	Washington, D. C.
Mary J. Snyder	Sacramento	San Francisco, Cal.
Eleanor L. Sweet	Los Angeles	Orlando, Fla.
Mary E. Swords	Oakland	Daytona Beach, Fla.
Gloria G. Vierra	Oakland	Daytona Beach, Fla.
Lois C. Welsh	South Gate	Ft. Oglethorpe, Ga.
Elizabeth J. Woodin	Sacramento	Ft. Des Moines, Ia.
Loretto G. Young	Berkeley	Ft. Devens, Mass.

COLORADO

From 2nd Officer to 1st Officer:

Sally J. Davis	Denver	Camp Ruston, La.

From 3rd Officer to 2nd Officer:

Vera M. Corlett	Denver	Daytona Beach, Fla.
Dorothy L. Starbuck	Brighton	Lowry Field, Denver Colo.
Reva M. Startzer	Denver	Minneapolis, Minn.
Mary N. Stephenson	Denver	Daytona Beach, Fla.
Mary F. Triplett	Denver	Daytona Beach, Fla.
Jeanne Warner	Ft. Collins	Daytona Beach, Fla.

CONNECTICUT

From 2nd Officer to 1st Officer:

Rebekah Fisk	Hartford	Washington, D. C.
Claire Sweany	New Haven	Ft. Des Moines, Ia.

From 3rd Officer to 2nd Officer:

Elizabeth H. Branch	Glenbrook	Daytona Beach, Fla.
Faith Conklin	Essex	Ft. Belvoir, Va.
Eleanor Fox	Stamford	Daytona Beach, Fla.
Roslyn N. Katz	Hartford	Camp Polk, La.
Shirley A. Rosenbloom	Hartford	Ft. Oglethorpe, Ga.
Gladys L. Stillman	Plainville	Daytona Beach, Fla.
Caroline T. Tupper	Bethel	Daytona Beach, Fla.

DELAWARE

From 2nd Officer to 1st Officer:

Frances A. Clements	Wilmington	Ft. Des Moines, Ia.
Jessie H. Morris	Wilmington	Camp Ruston, La.

From 3rd Officer to 2nd Officer:

Ruth A. Palmer	Wilmington	Ft. Oglethorpe, Ga.

DISTRICT OF COLUMBIA

From 3rd Officer to 2nd Officer:

MORE

Catherine E. Foster	Washington	Daytona Beach, Fla.
Clare W. Hall	Washington	Miami Beach, Fla.
Margaret E. Mizner	Washington	Washington, D. C.
Bernice R. Peachy	Washington	Daytona Beach, Fla.
Elizabeth Ray	Washington	Washington, D. C.
Fay L. Windor Rodgers	Washington	Daytona Beach, Fla.
Caroline H. Wanvig	Washington	Daytona Beach, Fla.
Bernice Woodward	Washington	Denver, Colo.

FLORIDA

From 2nd Officer to 1st Officer:

Edith H. Guthrie	Bartow	Ft. Devens, Mass.
Wilma R. Hague	Plant City	Washington, D. C.
Mary L. Kersey	Ft. Lauderdale	Ft. George Wright, Wash.
Celestina McKay	Tampa	Miami, Fla.
Mary V. Racey	Miami	Washington, D. C.
Edith M. Toffalotti	Port Tampa City	Camp Polk, La.
Janna Tucker	Bradenton	Kansas City, Mo.
Ellen E. Williams	Jacksonville	Jacksonville, Fla.
Lorene M. Wolcott	Miami	Atlanta, Ga.

From 3rd Officer to 2nd Officer:

Katherine D. Chaplin	Coral Gables	Miami, Fla.
Mary M. Devlin	Jacksonville	Jacksonville, Fla.
Elizabeth C. Graham	Miami	Grand Rapids, Mich.
Mildred R. Hearon	DeSoto City	Camp Ruston, La.
Camilla M. Kies	Jacksonville	Jacksonville, Fla.
Willa M. Mizell	West Palm Beach	Ft. Des Moines, Ia.
Lucy E. Shannon	Tampa	Roanoke, Va.
Elizabeth S. White	Miami Beach	Savannah, Ga.
Madge Williams	Jacksonville	Washington, D. C.

GEORGIA

From 2nd Officer to 1st Officer:

Corene Brooks	Montezuma	Daytona Beach, Fla.
Mary E. Elrod	Atlanta	Washington, D. C.
Mary C. Freeman	Newman	Ft. Worth, Texas
Elizabeth G. Taylor	Ft. Valley	Camp Polk, La.

From 3rd Officer to 2nd Officer:

Jane Bird	Savannah	Savannah, Ga.
Marjorie H. Booker	Atlanta	Ft. Oglethorpe, Ga.
Edith C. Bowers	Decatur	Daytona Beach, Fla.
Frances G. Buell	Atlanta	Daytona Beach, Fla.
Lois T. Burton	Atlanta	Ft. Des Moines, Ia.
Edith W. Harber	Atlanta	Camp Crowder, Mo.
Phyllis P. Jenkins	Athens	Ft. Des Moines, Ia.
Elna A. Lombard	Hephzibah	Camp Polk, La.
Margaret E. Lucas	Atlanta	Daytona Beach, Fla.
Jimmie Mimms	Atlanta	Ft. Des Moines, Ia.
Olive L. Reppard	Fitzgerald	Ft. Des Moines, Ia.
Georgia B. Watson	Elberton	Washington, D. C.
Alice J. Wood	Augusta	Ft. Des Moines, Ia.

IDAHO

From 3rd Officer to 2nd Officer:

Barbara W. Benson	Lewiston	Ft. Des Moines, Ia.
La Preal Blaisdell	Holbrook	Miami, Fla.
Bessie M. Dunning	Twin Falls	Ft. Des Moines, Ia.
Ida M. Ross	Burley	Daytona Beach, Fla.

MORE

ILLINOIS

From 2nd Officer to 1st Officer:

Anna M. Danovsky	Chicago	Ft. Leavenworth, Kan.
Mera Galloway	Evanston	Ft. Des Moines, Ia.
Barbara S. ManCelle	Urbana	Ft. Des Moines, Ia.
Jean E. Melin	Chicago	Omaha, Neb.
Ruth W. Mueller	Belleville	Daytona Beach, Fla.
Donna I. Niles	Chicago	Washington, D. C.
Priscilla Pattison	Chicago	Daytona Beach, Fla.
Ida M. Perry	Evanston	Ft. Des Moines, Ia.
Bee G. Rosenberg	Chicago	Washington, D. C.
Dorothea M. Ryan	Chicago	Washington, D. C.
Ruth Spivak	Chicago	Ft. Leavenworth, Kan.
Sarah B. Todd	Peoria	Camp Campbell, Ky.

From 3rd Officer to 2nd Officer:

Jeanne Billau	Chicago	Daytona Beach, Fla.
Lillian Bojar	Chicago	Sante Fe, N. Mex.
Leona E. Bullard	Decatur	Daytona Beach, Fla.
Mabel K. Busse	Chicago	Washington, D. C.
Irma J. Carstens	Chicago	Ft. Devens, Mass.
Janet L. Chadwick	Chicago	Ft. Oglethorpe, Ga.
Mary W. Cowie	Gillespie	Washington, D. C.
Anita H. Cox	Rockford	Ft. Des Moines, Ia.
Margaret E. Deane	Rushville	Salt Lake City, Utah.
Edna C. De Boer	Chicago	Ft. Des Moines, Ia.
Florabeth H. Ferri	Chicago	Durham, N. C.
Margaret I. Fullerton	Chicago	Daytona Beach, Fla.
Alice A. Cilster	Chicago	Bangor, Me.
Ruth V. Goelzs	Chicago	Ft. Oglethorpe, Ga.
Geneva C. Hall	Hines	Camp Ruston, La.
Jane Hoefer	Dixon	Ft. Des Moines, Ia.
Margaret R. Hoffman	Oak Park	Ft. Des Moines, Ia.
Bertha C. Hough	Chicago	Camp Denton, Texas
Kathryn H. Korn	Quincy	Daytona Beach, Fla.
Gretchen H. Kroch	Chicago	Ft. Oglethorpe, Ga.
Dorothy G. Lewis	Chicago	Ft. Des Moines, Ia.
Mary C. Martin	Springfield	Washington, D. C.
Lucille R. Novak	Cicero	Ft. Des Moines, Ia.
Madeline C. Palucci	Chicago	Ft. Des Moines, Ia.
Agnes J. Peterson	Chicago	Daytona Beach, Fla.
Martha A. Pichon	Braceville	Ft. Oglethorpe, Ga.
Mary M. Richards	Pekin	Washington, D. C.
Nell A. Risinger	Peoria	Daytona Beach, Fla.
Ona K. Smith	Wheaton	Ft. Devens, Mass.
Josephine E. Springer	Chicago	Rutland, Vt.
Nika Stanko	Chicago	Daytona Beach, Fla.
Mary D. Stewart	Murphysboro	Ft. Leonard Wood, Mo.
Jeanne E. Swann	Washington	Camp Ruston, La.
Elvena H. Ulrich	Maywood	Camp Monticello, Ark.
Margaret L. Waggoner	Peoria	Ft. Devens, Mass.
Judith V. Warnacutt	New Lenox	Daytona Beach, Fla.

INDIANA

From 2nd Officer to 1st Officer:

Louise E. Bain	Danville	Camp Ruston, La.
Gladys E. Hole	Bridgeport	Washington, D. C.
Ruth M. Morton	Terre Haute	Washington, D. C.
Pauline F. Pierce	Indianapolis	Washington, D. C.
Ruth S. Reece	New Castle	Ft. Des Moines, Ia.
Harriet C. Stout	Indianapolis	Hartford, Conn.
Irene C. Sweeney	Indianapolis	Omaha, Neb.

MORE

From 3rd Officer to 2nd Officer:

Bertha Barker	Morocco	Camp Polk, La.
Alice L. Brooks	Indianapolis	Ft. Oglethorpe, Ga.
Ruth M. Farrington	Indianapolis	Camp Crowder, Mo.
Jane Gillespie	Indianapolis	Philadelphia, Pa.
Charlene E. Hawes	Indianapolis	Ft. Des Moines, Ia.
Ida P. Jones	Shoals	Ft. Meade, Md.
Phyllis A. Miller	Indianapolis	Camp Pickett, Va.
Fay L. Pendergrass	Washington	Daytona Beach, Fla.
Jesse M. Shroyer	Peru	Ft. Des Moines, Ia.
Hilda K. Snyder	Rockport	Daytona Beach, Fla.
Dorothy A. Springer	Indianapolis	Daytona Beach, Fla.
Susie J. Thurman	Terre Haute	Ft. Des Moines, Ia.
Bethel E. Wilson	Indianapolis	Daytona Beach, Fla.

IOWA

From 2nd Officer to 1st Officer:

Clara G. F. Han	Des Moines	Washington, D. C.
Marion C. Lichty	Waterloo	Columbus, Ohio
Kathleen McClure	Iowa Falls	Montgomery, Ala.

From 3rd Officer to 2nd Officer:

Clara J. Courson	Des Moines	Ft. Oglethorpe, Ga.
Elizabeth L. Flanagan	Cedar Rapids	Camp Hood, Texas
Kola S. Gallaher	Council Bluffs	Ft. Des Moines, Ia.
Jeanne Hardie	Dubuque	Ft. Des Moines, Ia.
Marcella M. McCue	Greeley	Cheyenne, Wyoming
Barbara H. Small	Des Moines	Daytona Beach, Fla.
Vera E. Stiver	Des Moines	Ft. Des Moines, Ia.
Eva B. Yost	Des Moines	Jacksonville, Fla.

KANSAS

From 2nd Officer to 1st Officer:

Winifred L. Stilwell	Kansas City	Dallas, Texas

From 3rd Officer to 2nd Officer:

Doris L. Ayres	Eudora	Washington, D. C.
Marian E. Sears	Kansas City	Ft. Oglethorpe, Ga.
Maxyne J. Woody	Barnard	Daytona Beach, Fla.

KENTUCKY

From 2nd Officer to 1st Officer:

Pauline M. Matuska	Louisville	Camp Polk, La.
Katherine L. St. John	Frankfort	Camp Polk, La.
Dorothy G. Selby	Covington	Boston, Mass.

From 3rd Officer to 2nd Officer:

Anna B. Baker	Greenup	Ft. Des Moines, Ia.
Elizabeth G. Bell	Lexington	Ft. Oglethorpe, Ga.
Lucy P. Berry	Lexington	Miami Beach, Fla.
Louise Black	Elizabethtown	Daytona Beach, Fla.
Lois P. Brown	Lexington	Ft. Sill, Oklahoma
Ruby Carter	Harlan	Ft. Devens, Mass.
Doris V. Clark	Williamstown	Washington, D. C.
Gladys R. Clark	Franklin	Ft. Des Moines, Ia.
Virginia A. Eversole	London	Baltimore, Md.
Helen H. Horlacher	Lexington	Camp Polk, La.

MORE

Frances W. House	Lexington	Boston, Mass.
Charlotte M. Sumner	Louisville	Daytona Beach, Fla.
Mary L. Unthank	Harlan	Daytona Beach, Fla.

LOUISIANA

From 2nd Officer to 1st Officer:

Christine S. Moon	Ruston	Ft. Leavenworth, Kan.

From 3rd Officer to 2nd Officer:

Emily U. Miller	Shreveport	Dallas, Texas
Dorothy O. Namias	New Orleans	Ft. Des Moines, Ia.
Margaret E. Riley	New Orleans	Daytona Beach, Fla.
Frances E. Scafide	New Orleans	Daytona Beach, Fla.
Ethel R. Sentilles	New Orleans	Daytona Beach, Fla.
Ellen B. Solomon	Baton Rouge	Houston, Texas
Mona L. Voinche	Bunkie	Daytona Beach, Fla.

MAINE

From 2nd Officer to 1st Officer:

Annie V. Gardner	Portland	Ft. Oglethorpe, Ga.

From 3rd Officer to 2nd Officer:

Elizabeth W. Kingsbury	Kennebunk	Daytona Beach, Fla.
Rose C. Wilkes	Portland	Ft. Oglethorpe, Ga.

MARYLAND

From 2nd Officer to 1st Officer:

Elizabeth Guild	Baltimore	Eglin Field, Fla.
Louisa C. Randol	Woodbrook	Baltimore, Md.
Evelyn A. Rothrock	Baltimore	Ft. Des Moines, Ia.

From 3rd Officer to 2nd Officer:

Eunity F. Elderdice	Salisbury	Daytona Beach, Fla.
Gladys C. Hendrickson	Baltimore	Erie, Pa.
Jeanne L. McSheehy	Bethesda	Daytona Beach, Fla.
Berta R. Schoen	Baltimore	Ft. Oglethorpe, Ga.
Dorothy L. Simmons	Catonsville	Washington, D. C.
Ruth Wilson	Baltimore	Daytona Beach, Fla.

MASSACHUSETTS

From 2nd Officer to 1st Officer:

Brenda B. Boynton	Dorchester	Ft. Des Moines, Ia.
Joyce Burton	Boston	Butte, Mont.
Blanche P. Cline	Belmont	Ft. Bragg, N. Car.
Mary F. Connelly	Dorchester	Ft. Des Moines, Ia.
Nina E. V. Donahue	Braintree Highlands	Camp Polk, La.
Ruth H. Kerr	South Duxbury	Stout Field, Ind.
Elizabeth S. MacDonald	Springfield	Atlanta, Ga.
Dorothea W. Newsome	Boston	Camp Polk, La.
Margaret M. Phillips	Worchester	Daytona Beach, Fla.
Alberta Holdsworth Reynolds	Boston	Washington, D. C.
Miriam A. Riley	Lowell	Camp Polk, La.
Eleanore C. Sullivan	Lawrence	Ft. Des Moines, Ia.

MORE

From 3rd Officer to 2nd Officer:

Doris E. Bauckman	Boston	Miami Beach, Fla.
Florence B. Boush	Springfield	Minneapolis, Minn.
Lydia R. Briggs	Attleboro	Ft. Oglethorpe, Ga.
Hazel B. Bundy	South Acton	Ft. Devens, Mass.
Marjorie R. Burton	Jamaica Plain	Camp Monticello, Ark.
Rosalie Cohen	Roxbury	Daytona Beach, Fla.
Helen W. Currie	South Hadley	Daytona Beach, Fla.
Esther Facktoroff	Boston	Boston, Mass.
Catherine E. Falvey	Somerville	Ft. Oglethorpe, Ga.
Harriette C. Could	Brookline	Richmond, Ky.
Madeline T. Hawes	Lynn	Ft. Oglethorpe, Ga.
Florence V. Howe	Gardner	Washington, D. C.
Katherine Krauss	Dorechester	Ft. Oglethorpe, Ga.
Edith M. Lewis	Attleboro	Lexington, Va.
Alma B. Littlefield	Milton	Miami Beach, Fla.
Alice E. McNiff	Hudson	Ft. Des Moines, Ia.
Mary E. Manning	Worcester	Washington, D. C.
Alba C. Martinelli	Plymouth	Camp Polk, La.
Sylvia D. Neilson	Wilmington	Ft. Des Moines, Ia.
Beatrice A. Parker	Fall River	Washington, D. C.
Matilda Pflaumer	Waymouth	Daytona Beach, Fla.
Stephanie A. Podzunas	Walpole	Daytona Beach, Fla.
Laura E. Preble	Dorchester	Camp Ruston, La.
Margaret E. Randall	Framingham Center	New Haven, Conn.
Cora E. Sharon	Wrentham	Ft. Devens, Mass.
Beryl M. Simpson	Amherst	Camp Polk, La.
Olive H. Stratton	Malden	Ft. Devens, Mass.
Marian F. Woolworth	Boston	Ft. Oglethorpe, Ga.

MICHIGAN

From 2nd Officer to 1st Officer:

Helen G. Gardiner	Detroit	Omaha, Neb.
Katherine M. Marshall	Kalamazoo	Ft. Devens, Mass.
Helen G. Westerdale	Highland Park	Daytona Beach, Fla.

From 3rd Officer to 2nd Officer:

Reva T. Blumenthal	Detroit	Camp Monticello, Ark.
Ruth E. Dehn	Three Rivers	Ft. Oglethorpe, Ga.
Helen L. Dunlap	Kalamazoo	Ft. Des Moines, Ia.
Nancy D. Gossard	Detroit	Daytona Beach, Fla.
Myrtle M. Greenseth	Muskegon	Ft. Des Moines, Ia.
Dorothea E. Hilliard	Birmingham	Daytona Beach, Fla.
Clara L. Kutschinski	Grand Rapids	Camp Monticello, Ark.
Penelope H. Sawkins	Alma	Washington, D. C.
Naomi P. Scully	L'Anse	Ft. Des Moines, Ia.

MINNESOTA

From 2nd Officer to 1st Officer:

Gladys M. Nelson	St. Paul	Daytona Beach, Fla.
Evangeline Peterson	Stillwater	Fort Douglas, Utah
Annette T. Whiting	Owattonna	Ft. Des Moines, Ia.

From 3rd Officer to 2nd Officer:

Geraldine W. Barry	St. Paul	Washington, D. C.
Inez Steenson Benjamin	Minneapolis	Daytona Beach, Fla.
Dorothy M. Bourek	Minneapolis	Washington, D. C.
Mary V. Crook	Minneapolis	Daytona Beach, Fla.
Martina V. Donnelly	St. Paul	Ft. Oglethorpe, Ga.
Barbara M. Hadley	Austin	Washington, D. C.
Marie Kehrer	St. Paul	Ft. Des Moines, Ia.
Kathryn L. McWilliams	St. Paul	Ft. Des Moines, Ia.

MORE

Bernice C. Philipps	St. Paul	Ft. Des Moines, Ia.
Edel V. Sattre	Moorhead	Daytona Beach, Fla.
Martha Selvik	Minneapolis	Washington, D. C.
Eleanor L. Wildes	Kasota	Ft. Bragg, N. C.

MISSISSIPPI

From 2nd Officer to 1st Officer:

Rebecca Cato	Hattiesburg	Washington, D. C.
Evelyn C. Shuttleworth	Jackson	Camp Monticello, Ark.
Ruth E. Virden	Jackson	Washington, D. C.

From 3rd Officer to 2nd Officer:

Cecelia M. Berry	Utica	Camp Ruston, La.
Margaret S. Farr	Natchez	Camp Monticello, Ark.
Mary A. Fatherree	Meridian	Ft. Oglethorpe, Ga.
Alice P. Nevels	Jackson	Camp Ruston, La.
Mary Jayne G. Poindexter	Greenwood	Daytona Beach, Fla.
Juanita S. Stryker	Starkville	Washington, D. C.
Maggie L. Willia	Starkville	Daytona Beach, Fla.

MISSOURI

From 2nd Officer to 1st Officer:

Jane Robertson	Kansas City	Daytona Beach, Fla.

From 3rd Officer to 2nd Officer:

Sarah A. Bagby	Richmond Heights	Washington, D. C.
Bette A. Bertrand	St. Louis	Camp Polk, La.
Jean S. Besson	Ft. Leonard Wood	Daytona Beach, Fla.
Mary E. Chamberlain	Maplewood	Daytona Beach, Fla.
Irene I. Collins	St. Louis	Daytona Beach, Fla.
Melba M. Hargis	Kansas City	Ft. Des Moines, Ia.
Rose M. Howard	Slater	Ft. Des Moines, Ia.
Mary I. Moreland	University City	Ft. Des Moines, Ia.
Margaret Porter	Kansas City	Daytona Beach, Fla.
Leola M. Reese	Sedalia	Pine Bluff, Ark.
Louise M. Winslow	Kansas City	Ft. Des Moines, Ia.

MONTANA

From 2nd Officer to 1st Officer:

Betty Clague	Missoula	San Francisco, Cal.

From 3rd Officer to 2nd Officer:

Margaret L. Corlett	Drummond	Ft. Des Moines, Ia.
Mary H. Dignan	Glasgow	Ft. Des Moines, Ia.
Sarah L. Justiss	Billings	Ft. Oglethorpe, Ga.
Catherine M. O'Hare	Great Falls	Daytona Beach, Fla.

NEBRASKA

From 2nd Officer to 1st Officer:

Mary R. LeBow	Omaha	Camp Shelby, Miss.

From 3rd Officer to 2nd Officer:

Ida L. House	Lincoln	Ft. Des Moines, Ia.
Mary E. Miller	Lincoln	Daytona Beach, Fla.

MORE

Phyllis L. Propp	Omaha	Daytona Beach, Fla.
Agnes T. Semin	Brainard	Ft. Des Moines, Ia.

NEVADA

From 2nd Officer to 1st Officer:

Mae I. Simas	Reno	Camp Polk, La.

NEW HAMPSHIRE

From 3rd Officer to 2nd Officer:

Martha-Ann Hoyt	Manchester	Daytona Beach, Fla.

NEW JERSEY

From 2nd Officer to 1st Officer:

Annett H. Bouma	Passaic	Philadelphia, Pa.
Winifred E. Cullen	Washington	Camp Polk, La.
Christie M. Tollefson	Montville	Ft. Leavenworth, Kan.

From 3rd Officer to 2nd Officer:

Roberta M. Adamo	Hemmonton	Orlando, Fla.
Marjorie W. Carson	Montclair	Daytona Beach, Fla.
Bernice D. Coulter	Atlantic City	Ft. Meade, Md.
Dorothy R. Feiser	Denville	Ft. Des Moines, Ia.
Elizabeth A. McHugh	Arlington	Ft. Oglethorpe, Ga.
Elizabeth A. Rutledge	South Orange	Ft. Oglethorpe, Ga.
Loretta F. Speer	Union City	Ft. Des Moines, Ia.

NEW MEXICO

From 2nd Officer to 1st Officer:

Joy A. Fincke	Santa Fe	Ft. Devens, Mass.

From 3rd Officer to 2nd Officer:

Carolyn F. Greenway	Las Cruces	Ft. Devens, Mass.
Fern McGee	Farmington	Sante Fe, N. Mex.

NEW YORK

From 2nd Officer to 1st Officer:

Barbara Adair	Snyder	Ft. Des Moines, Ia.
Sophia J. Bogdan	Buffalo	Boston, Mass.
Marie T. Cranney	Albany	Syracuse, N. Y.
Mary E. Dixon	White Plains	Camp Polk, La.
Helen G. Fontaine	Roslyn, L. I.	Washington, D. C.
Elizabeth H. Gilbert	Rochester	Mitchel Field, N. Y.
Alice G. Gordon	New York	Boston, Mass.
Jacqueline G. Gutwillig	New York	Daytona Beach, Fla.
Jean Kiendl	Garden City, L.I.	Ft. Oglethorpe, Ga.
Genieva M. Moran	Potsdam	Daytona Beach, Fla.
Joan G. Murray	Port Washington, L.I.	Washington, D. C.
Elizabeth Paine	Rochester	Boston, Mass.
Beatrice I. Ringgold	New York	Seattle, Wash.
Rose F. Ross	New York	Daytona Beach, Fla.
Dorothy Warren	New York	New York, N. Y.
Jane B. Wells	Rochester	Ft. Des Moines, Ia.

From 3rd Officer to 2nd Officer:

Betty J. Austin	Ithaca	Ft. Des Moines, Ia.

MORE

Rita Bedell	Baldwin, L.I.	Jacksonville, Fla.
Catherine V. Britt	Jackson Heights, L.I.	Ft. Oglethorpe, Ga.
Grace M. Brott	Gloversville	Daytona Beach, Fla.
Catherine B. Brown	New York	Ft. Des Moines, Ia.
Adelaide M. Bruns	New York	Camp Ruston, La.
Hedwig J. Cadell	Syracuse	Daytona Beach, Fla.
Edith E. Cairns	Utica	Memphis, Tenn.
Rosanna M. Chad	Buffalo	Daytona Beach, Fla.
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Harriet A. Davis	Rochester	Ft. Oglethorpe, Ga.
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Mable E. Dietz	Cobbleskill	Ft. Des Moines, Ia.
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Dorothy M. Harms	New York	Camp Monticello, Ark.
Elizabeth A. Harper	Batavia	Ft. Des Moines, Ia.
Selma L. Herbert	New York	Washington, D. C.
Ruby E. Herman	Newburgh	Washington, D. C.
Betty C. Jokl	Buffalo	Daytona Beach, Fla.
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Eleanor E. Lawson	Niagara Falls	Ft. Des Moines, Ia.
Constance H. Levy	New York	Ft. Des Moines, Ia.
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Leila R. Chapman	Steubenville	Miami Beach, Fla.
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Mary F. Hunter	Toledo	Ft. Oglethorpe, Ga.
Mary J. Lauritzen	Akron	Daytona Beach, Fla.
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Eva K. Peterson	Portland	Washington, D. C.
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Thelma J. Swennes	Eugene	Daytona Beach, Fla.

PENNSYLVANIA

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Ruth S. Ginns	Philadelphia	Ft. Oglethorpe, Ga.
Elizabeth M. Jones	Chestnut Hill	Jacksonville, Fla.
Jean M. Korn	Philadelphia	Daytona Beach, Fla.
Phebe Lee	Mountain Top	Ft. Des Moines, Ia.
Pauline V. Linch	Philadelphia	Ft. Leavenworth, Kan.
Mary L. Milligan	Edgewood	Ft. Des Moines, Ia.
Theresa C. Mravintz	Pittsburgh	Ft. Des Moines, Ia.
Anna M. Roan	Forty Fort	Ft. Des Moines, Ia.
Elizabeth R. Rodd	Pittsburgh	Ft. Leavenworth, Kan.
Jane A. Stretch	Newtown	Ft. Dix, N. J.
Elizabeth A. Wilbern	Highspire	Camp Polk, La.

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27

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Florence M. Bangert	Philadelphia	Nashville, Tenn.
Pauline Bevan	Wilkinsburg	Ft. Des Moines, Ia.
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Sara M. Byrnes	McKees Rocks	Camp Ruston, La.
Kathryn D. Cleveland	Alden	Ft. Des Moines, Ia.
Gwendolyn N. Clymer	Lancaster	Daytona Beach, Fla.
Mary E. Cole	Pittsburgh	Daytona Beach, Fla.
Kathleen R. Donnelly	Pittsburgh	Camp Ruston, La.
Della M. Herrmann	Pittsburgh	Washington, D. C.
Dorothea J. Hoenstine	Johnstown	Daytona Beach, Fla.
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Elizabeth C. Leggett	Sewickley Heights	Ft. Des Moines, Ia.
Catherine J. Lyons	Scranton	Russellville, Ark.
Marion R. McKay	Pittsburgh	Ft. Oglethorpe, Ga.
Bernadette M. Marlier	Pittsburgh	Washington, D. C.
Jane I. Musser	Franklin	Daytona Beach, Fla.
Kathryn D. Neely	Sewickley	Daytona Beach, Fla.
Martha E. Pierce	Indiana	Washington, D. C.
Georgia H. Powers	Rome	Ft. Des Moines, Ia.
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Kathryn M. Vannauker	Mechanicsburgh	Ft. Oglethorpe, Ga.
Cora J. Walker	Torentum	Jackson, Miss.
Stella R. Wenker	Lock Haven	Ft. Des Moines, Ia.
Sylvia K. Wiener	Philadelphia	Ft. Des Moines, Ia.

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Lois Burlingame	Warwick	Ft. Oglethorpe, Ga.
Marjorie F. Farnum	Apponaug	Ft. Oglethorpe, Ga.

MORE

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From 2nd Officer to 1st Officer:

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Mary C. Rogers	Bennettsville	Ft. Des Moines, Ia.
Mary D. Winecoff	Florence	Daytona Beach, Fla.

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Mary V. Broadwater	Charleston	Daytona Beach, Fla.
Caroline D. Eason	Charleston	Daytona Beach, Fla.
Alice H. Hartley	Charleston	Camp Ruston, La.
Lucia T. Hudgens	Clemson	Washington, D. C.
Marion N. Hunt	Columbia	Daytona Beach, Fla.
Mary L. King	Florence	Commerce, Tex.
Irene T. LaBorde	Columbia	Daytona Beach, Fla.
Phyllis C. LaFar	Charleston	Charleston, S. C.
Katherine H. Lyon	Rock Hill	Daytona Beach, Fla.
Lois Query	Wellford	Daytona Beach, Fla.
Madge L. Rivers	Charleston	Camp Polk, La.
Mildred J. Smathers	Columbia	Daytona Beach, Fla.
Evelyn E. Taylor	Charleston	Camp Polk, La.

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Margarite H. Tanck	Sioux Falls	Daytona Beach, Fla.

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Marjorie G. Hugo	Memphis	Camp Ruston, La.
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Mary C. Weems	Dickson	Daytona Beach, Fla.

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Jenny L. Lea	Chattanooga	Daytona Beach, Fla.
Margaret L. Trull	Nashville	Daytona Beach, Fla.

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Vada L. Cole	Baird	Ft. Oglethorpe, Ga.
Margaret M. Glasscock	San Antonio	Camp Ruston, La.
Manice M. Hill	Houston	Little Rock, Ark.
Oma R. Massey	Dallas	Ft. Des Moines, Ia.
Mattie E. Treadwell	Uvalde	Ft. Leavenworth, Kan.
Arthyeta Van Dalsem	Abilene	Tampa, Fla.
Treila M. Welch	Houston	Ft. Leavenworth, Kan.
Alice H. Williams	Port Arthur	Washington, D. C.

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Velma R. Aldridge	Port Arthur	Daytona Beach, Fla.
Beatrice Athanas	Sweetwater	Daytona Beach, Fla.
Caroline D. Atkinson	Houston	Daytona Beach, Fla.
Jane E. Brown	Pearsall	Daytona Beach, Fla.

MORE

Lou E. Canfield	George West	Daytona Beach, Fla.
Ada May Cole	El Paso	Washington, D. C.
Ruth A. Goates	Los Fresnos	Ft. Oglethorpe, Ga.
Pearl E. Hightower	Beeville	Peoria, Ill.
Charlee L. Kelly	El Paso	Dallas, Texas
Elizabeth B. LaFonte	Beaumont	Ft. Oglethorpe, Ga.
Frances E. McCluskey	Waco	Dallas, Texas
Gloria B. Margules	Dallas	Ft. Des Moines, Ia.
Xelma Mullinax	Dallas	Daytona Beach, Fla.
Dora F. Petmickey	Austin	Daytona Beach, Fla.
Grace J. Polk	Corsicana	Daytona Beach, Fla.
Marguerite L. Roux	Dallas	Daytona Beach, Fla.
Betty J. Savage	Lubbock	Ft. Des Moines, Ia.
Winnie J. Siddens	Weinert	Ft. Des Moines, Ia.
Leila D. Spann	Plainview	Seattle, Wash.

UTAH

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Mary I. Judson	Salt Lake City	Daytona Beach, Fla.
Maxine Merrill	Salt Lake City	Washington, D. C.

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VIRGINIA

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Dovey M. Johnson	Richmond	Dallas, Texas
Louise B. Nelson	Richmond	Camp Upton, N. Y.
Mary E. Pulliam	Richmond	Washington, D. C.
Martha F. Rector	Roanoke	Little Rock, Ark.

From 3rd Officer to 2nd Officer:

Carolyn E. Boatwright	Buckingham	Daytona Beach, Fla.
Gladys V. Chick	Lynchburg	Ft. Des Moines, Ia.
Dorothy L. Irvine	Charlottesville	Ft. Devens, Mass.
Florence Miller	Bennington	Ft. Devens, Mass.
Jack S. Phillips	Richmond	Ft. Worth, Texas
Lavinia L. Redd	Beaverdam	Daytona Beach, Fla.
Anna B. Ryce	Richmond	Ft. Des Moines, Ia.
Jeanne E. Thompson	Norfolk	Daytona Beach, Fla.

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Virginia Beeler Bock	Seattle	Washington, D. C.
Muriel A. McCall	Seattle	Washington, D. C.
Mary E. McGlinn	Bellingham	San Francisco, Calif.

From 3rd Officer to 2nd Officer:

Sylvia E. Anttilla	Mount Vernon	Ft. Des Moines, Ia.
Margaret H. Bennett	Seattle	Ft. Des Moines, Ia.
Eva L. Casey	Walla Walla	Daytona Beach, Fla.
Marie L. DeGallier	Seattle	Camp Monticello, Ark.
Margaret C. Gochnour	Yakima	Ft. Des Moines, Ia.

MORE

Mary L. Hill	Grayland	Daytona Beach, Fla.
Lois V. Hubbell	Ellensburg	Daytona Beach, Fla.
Alice E. Mathey	Monroe	Daytona Beach, Fla.
Karla D. Mogensen	Yakima	Daytona Beach, Fla.
Ueda Neely	Seattle	Daytona Beach, Fla.

West Virginia

From 2nd Officer to 1st Officer:

Gladys V. Bowman	Hinton	Miami Beach, Fla.
Helen A. Gaynor	Wheeling	Ft. Des Moines, Ia.

From 3rd Officer to 2nd Officer:

Geneva H. Bobbitt	Oak Hill	Ft. Oglethorpe, Ga.
Fay S. Chambers	Matewon	Salt Lake City, Utah.
Evangline G. Comer	Charleston	Ft. Devens, Mass.
Ida R. Hark	Charleston	Daytona Beach, Fla.
Stella E. Pietrowski	Fairmont	Daytona Beach, Fla.
Helen Tuckwiller	Charleston	Ft. Oglethorpe, Ga.

Wisconsin

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Louise E. Goeden	Milwaukee	Washington, D. C.
Helen E. Hanson	Niagara	Ft. Des Moines, Ia.
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Helen E. Tait	Mt. Horeb	Washington, D. C.
Ruth T. Woodworth	Eau Claire	Ft. Leavenworth, Kan.

From 3rd Officer to 2nd Officer:

Vivian C. Bragg	Eau Claire	Camp Ruston, La.
Grace E. Cockrell	Madison	Daytona Beach, Fla.
Vivian A. Gray	Evanston	Daytona Beach, Fla.
Mary L. Hart	Beohn	Ft. Custer, Mich.
Rosalyn J. Kaiser	Racine	Ft. Des Moines, Ia.
Maybelle Kohl	Madison	Ft. Des Moines, Ia.
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Cecile M. Lane	Milwaukee	Chicago, Ill.
Elizabeth M. Lutze	Milwaukee	Ft. Leavenworth, Kan.
Mildred J. Pierce	Milwaukee	Camp Monticello, Ark.
Elizabeth S. Puhr	Milwaukee	Memphis, Tenn.
Agnes D. Thiemann	Reedsburg	Washington, D. C.
Virginia L. Titus	Green Bay	Ft. Des Moines, Ia.
Virginia F. Williams	Milwaukee	Dallas, Texas.

Wyoming

From 3rd Officer to 2nd Officer:

Lucile E. Rath	Cheyenne	Ft. Des Moines, Ia.

END

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WAVES-	31 July -	Officers	8329
		Enlisted	74752
			83081
MARINES -	"	OFFICERS	822
		ENLISTED	17641
			18463
SPARS	"	OFFICERS	857
		ENLISTED	8824
			9681
WACS	1 MAY -	TOTAL	99,000-

Women [illegible] Robinson ~~[illegible]~~ [illegible]

[Public Law 38—78th Congress]

[Chapter 63—1st Session]

[H. R. 1857]

AN ACT

To provide for the appointment of female physicians and surgeons in the Medical Corps of the Army and Navy.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That hereafter during the present war and six months thereafter there shall be included in the Medical Departments of the Army and Navy such licensed female physicians and surgeons as the Secretary of War and the Secretary of the Navy may consider necessary, whose qualifications, duties, and assignments shall be in accordance with regulations to be prescribed by the Secretary and who shall be appointed and at his discretion removed by the Surgeon General of the Army or Navy, subject to the approval of the Secretary of War or the Secretary of the Navy. Those appointed shall be commissioned in the Army of the United States or the Naval Reserve, and shall receive the same pay and allowances and be entitled to the same rights, privileges, and benefits as members of the Officers' Reserve Corps of the Army and the Naval Reserve of the Navy with the same grade and length of service.

Approved April 16, 1943.

Should We Have A Compulsory National War Service Act?

A Discussion Leaflet From the Office of War Information

An Outline For Teachers, Discussion Leaders, and Speakers

Discussion Guide No. 2

THE PROBLEM

We have what it takes to win this war—food, raw materials, machines, men. Our problem is how best to use them. In the case of manpower the problem is: How can we put the right men in the right place at the right time?

The Austin-Wadsworth bill is an attempt to provide an adequate supply of workers in war industries, agriculture, and other occupations, and to maintain a balance between these workers and the armed forces. It seeks to make all civilians, both men and women, liable to contribute to the war effort in a noncombatant capacity.

There would be registration of all women between the ages of 18 and 50.

The only exceptions within the draft age would be those women who are in the armed forces, who are handicapped and diseased, or who have charges needing personal care, such as children, invalids, and old people.

The President, through the Chairman of the War Manpower Commission, could call for volunteers for war work. If there was not a sufficient response from qualified men and women, the WMC would supply the required number from among those liable under the Selective War Service Act.

HOW DID THIS PROBLEM ARISE?

This problem has become serious because Germany, Italy, and Japan got the jump on us. They went on a wartime footing years ago. We did peacetime business until the last possible moment. We postponed converting as long as we possibly could. We put steel into luxuries and men into peacetime industries.

Then we had to convert fast. Millions of our younger men were called to the armed services. Their places in industry and on the farm had to be taken by other men and women. We had to step up production; that required still more workers. Wartime production required special skills for which peacetime industry had inadequately prepared us, and there was little time for training.

Total war requires enormous manpower. The War Manpower Commission has estimated that by the end of 1943 we shall need approximately 10,700,000 for the armed services, 10,500,000 in munitions industries, 8,000,000 in essential nonagricultural industries, 8,900,000 in agriculture (will be increased to 12,000,000 during seasonal peak), 23,400,000 in other essential civilian industries. Those are only the estimates. The demands may well be greater.

Assuming that we have enough manpower to meet these needs, the sorry fact remains that we don't have enough at the right times at the right places. Some great war industrial areas are desperately short of workers; other cities have a surplus. Men from the farms have gone into the services and the factories; now farmers in some parts of the country cannot get helpers or tenants. We have men working in nonessential industries who should be helping to make materials of war. We have skilled men in one corner of the country who are worse needed in other places. We haven't put enough women, or Negroes, or members of other minority groups to work in war industry. We haven't made enough use of older people or of high school boys and girls in vacation time.

We need a reallocation and a more complete use of manpower, materials, and facilities. No one doubts that. The question is, can we accomplish it without a compulsory war service law which would draft workers for jobs as our Selective Service drafts men for the armed forces?

Those who, with honest conviction, take sides on this issue, agree as to the seriousness of the problem just described. They agree as to the necessity for some kind of an action program to solve the problem. It is upon the plan of attack that they disagree. To clarify the points of disagreement, to encourage citizens to discuss the manpower problem, the following summary outline of some of the arguments advanced is offered.

IS A MANPOWER LAW NECESSARY?

Yes, because other solutions won't work.

1. *Voluntary local action has failed.*

The head of one of our war agencies has said: "Our over-all program is so tremendous that it is really beyond the concept of man. War strategy changes

No, because other solutions will work.

1. *Voluntary local action will work.*

The problem is not a national problem at all. It is a series of local problems and what will work in one area, where the need is particularly acute, will not

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so quickly that there will have to be the power to switch manpower to meet these emergencies when they arise."

The problem must be solved by an over-all view. Local action will help, but without a compulsory national plan it will not be enough. It will not transfer surplus workers to areas of scarcity. It will not determine priorities between the needs and demands of separate cities or of industries in separate cities. The citizens' labor army needs a high board of strategy with legal powers of enforcement just as much as the citizens' military army does.

necessarily work in a section where the situation is less serious. Moreover, we haven't given the voluntary system a chance to work. War Manpower Commissioner McNutt has only recently announced plans for the Voluntary Mobilization of Womanpower. This program will relieve the shortage without compulsory national legislation. A recent Gallup Poll of employed men not now working in war plants shows that 49 percent would be willing to take such a job. Forty percent of the women interviewed showed a willingness to take war work. Moreover, by the voluntary agreement method, we have already come a long way toward the goal of 18.5 million war workers by the end of 1943.

2. *A longer workweek may help to reduce shortages but it will not get at the basic problem of shortages and surpluses of different kinds of skilled labor, in different sections of the country.* It is no help to have a lathe operator work longer hours when the need is for skilled spot welders. Moreover, lengthening the workweek without the added step of passing a national manpower law would merely give official recognition to what has already occurred. In a recent Fortune survey, 43 percent of the manufacturers reporting already show a workweek of 48 hours. There must be a shift of workers to war industry by national legislation, as well as a longer workweek.

2. *A longer workweek will relieve the manpower shortage. Increasing the workweek from 40 to 48 hours is equivalent to adding hundreds of thousands of workers to our labor force.* The recent action of the President, establishing a 48-hour week in certain areas of the country, will tend to relieve the shortage.

There is evidence to indicate that many professional people and business men would be willing to devote a measure of their time each week to war production. One concern has actually worked out a system of 4-hour early evening shifts for persons otherwise employed during the day. Let us think of a longer workweek for everyone, not only for the farmer and the worker now employed in war industry.

3. *Planned production is not a complete substitute for a national manpower law.* Long-term production planning of the type necessary to use existing manpower resources where these are now located is impracticable because we cannot plan far enough ahead. We cannot tell from month to month how military developments will change industrial and food needs. Certainly we must plan as far ahead as we can, but we shall need a compulsory labor law to make our planning work anyway.

3. *A planned production program is to be preferred to a national manpower law.*

"Give us a program," the Tolan Committee demands, "and then fit manpower into it." We do need a rational long-term program of planned production which would use little plants as well as big ones, which would put the orders where the men are, rather than the men where the orders are. It would then be unnecessary to make any large-scale shift of workers. Until we have such a program, passage of manpower law would be merely a compromise and a dodging of the real issue.

For discussion:

Is there a shortage of workers in this community? On the farms? Can our community meet this shortage without outside help? How? Could the shortage in some places be relieved by greater use of minority groups, handicapped workers and women? If there is no shortage, could our workers help elsewhere? In what kind of work? What is being done now in this community with reference to the manpower problem? What can we do?

IS A MANPOWER LAW DESIRABLE?

Yes, because it is the most democratic method for meeting the problem.

Compulsory labor service in wartime is democratic. It is no different in principle from compulsory military service. Total war requires that every citizen be at his country's disposal to work or fight wherever and whenever he is needed. Any sacrifice which

No, because it is undemocratic and a dangerous extension of Federal power.

A compulsory labor law is undemocratic. It is an attack on the worker's freedom of choice, the employer's freedom of enterprise. It removes at one blow the rights of free labor we have worked a hundred years to build up. If the war should last a long might be required of a civilian, as a result of such a law, would certainly not even be comparable to those asked of our fighting forces. In fact, such a law would at least help to equalize the burdens which the war imposes and hence might contribute to national unity. Moreover, the present system is not one of voluntary local action. It is a system of regulation by executive order, as in the case of the choice now presented to draft-age workers in nonessential lines, of shifting to essential services or being drafted.

Determination of policy by legislative action is more democratic than determination of policy by administrative power.

time, the effect on the future of our labor policy might be profound and dangerous. Moreover, at a time when the control of the Federal government is being extended into more and more areas of our national life, such a law would be an unnecessary interference with the rights of the individual worker and employer. Such a move toward regimentation of the working population would only reduce efficiency and weaken morale.

Moreover, a law regimenting labor would necessarily involve an equal regimentation of capital and industry, which is also objectionable.

The exercise of presidential authority in wartime is both necessary and constitutional. It provides greater flexibility of control in a complicated and constantly shifting situation than would inflexible legislative direction.

For discussion:

Would you feel that if you were told when, where, and at what job to work, you were being regimented? Can we get the results we want without compulsory legislation?

WOULD A MANPOWER LAW WORK?

Yes, because a national manpower law is the most practicable method of solving our manpower problem.

In the case of military service, our people, through their representatives, decided that Selective Service was the only practicable method for insuring an adequate military force. By now, the system of voluntary enlistment has been closely restricted in favor of the draft through Selective Service. Our experience in this instance should show that it is not practicable to depend on a voluntary choice of work to give us an adequate work force. A man with a good job in nonessential industry is not likely to leave it for what might be a lower-paying or less permanent job in war industry. In normal times, supply and demand, and the operation of the competitive system, permit a certain amount of free choice and mobility in the labor supply, but in wartime a complete dependence on wage differentials to redistribute labor would probably lead to expensive competition, pirating, and hoarding of workers. Furthermore, it is a slow process.

The experience of England, where a voluntary labor system failed and had to be replaced with a compulsory system, is worth considering in this connection. The situation in the United States has now become similarly acute and must be similarly treated.

No, because a national manpower law would be quite impracticable as a method of solving our manpower problem.

Such a law would be very hard to administer, much harder than Selective Service, because there will be many more factors to consider. The Selective Service board considers quotas, fitness, dependency, and works by relatively simple rules. The war work service board would have to consider the demands of special jobs and skills, the problems of moving families, the effect on industries from which the workers are taken. The making up of quotas for industrial and farm workers would be far more complex than making quotas for Army and Navy service. War production is concentrated in only 200 of the 3,075 counties in the United States. Agricultural county boards would have to select men for industrial centers.

The present system of attacking manpower problems through labor-management cooperation with government on a national, regional, and local basis and the policy of diverting government contracts to less critical areas has already eased manpower shortages and demonstrated the workability of such procedures.

British legislation grew out of the voluntary agreement of labor and management in view of the intensity of the crisis there and the governmental controls which were set up still operate largely through a system of local labor-management cooperation.

For discussion:

Would you, or your fellow citizens, be willing or competent to make decisions affecting the occupations and lives of hundreds of families in your community? Can the problem be solved by local action? If so, does this mean that there should not be a law for the Nation as a whole? If not, does this mean that there should be a law for the Nation as a whole? What part can the United States Employment Service play in accomplishing the shift of workers from nonessential jobs to war industry? Might the district offices of the United States Employment Service be relied upon to bridge the gap between national need and varying local conditions?

SOURCES OF INFORMATION

Some Reading Suggestions

1. *Victory,* official weekly bulletin of Office of War Information; 75 cents per year. Superintendent of Documents, Washington, D. C.

2. *Manpower* reports, Select Committee Investigating National Defense Migration, House of Representatives, 78th Congress. Superintendent of Documents, Washington, D. C. Price, 5 cents.

3. *The Employment of Women in War Production,* May 1942.
Published by Social Security Board, Federal Security Agency, Washington, D. C.

4. *Is There Enough Manpower?* by Harold W. Metz.
Price, 25 cents. Brookings Institute, Washington, D. C.

5. Broadcasts (Transcripts):
No. 241. *Manpower.*
No. 253. *Behind the Labor Crisis.*
No. 213. *Wanted: 30,000,000 Men.*
No. 210. *Women, Work, and the War.*
University of Chicago Round Table, Chicago, Ill. Price, 10 cents each.

6. *Manpower Review,* War Manpower Commission, Washington, D. C. Certain issues have emphasized phases of the problem, such as womanpower, discrimination, and use of the occupationally handicapped.

7. *Manpower—What Should Be Done About It.* The National Policy Committee, Washington, D. C. Price, 25 cents.

8. *Should Civilians Be Drafted for National Service?* Town Meeting of the Air, Vol. 8, No. 42. American Education Press, Columbus, Ohio. Price, 10 cents.

9. *Where Can We Get War Workers?* Public Affairs Pamphlet, No. 75, Public Affairs Committee, Inc., 30 Rockefeller Plaza, New York, N. Y. Price, 10 cents.

10. *The Manpower Policy.* American Forum of the Air, Vol. 5, No. 9. Ransdell Inc., Washington, D. C. Price, 10 cents.

Films

The Arm Behind the Army (10 minutes).
Shows that success of the Army depends upon success of labor and industry.

Manpower (8 minutes).
Presents manpower problems and methods of solution.

Women in Defense (10 minutes).
Shows various roles of women in the war effort.

The above films are available from film distributors in all parts of the country. For specific sources, write:

Office of War Information
Bureau of Motion Pictures
1400 Pennsylvania Ave. NW.
Washington, D. C.

Tools of War.
The military importance of industrial workers in Canada.

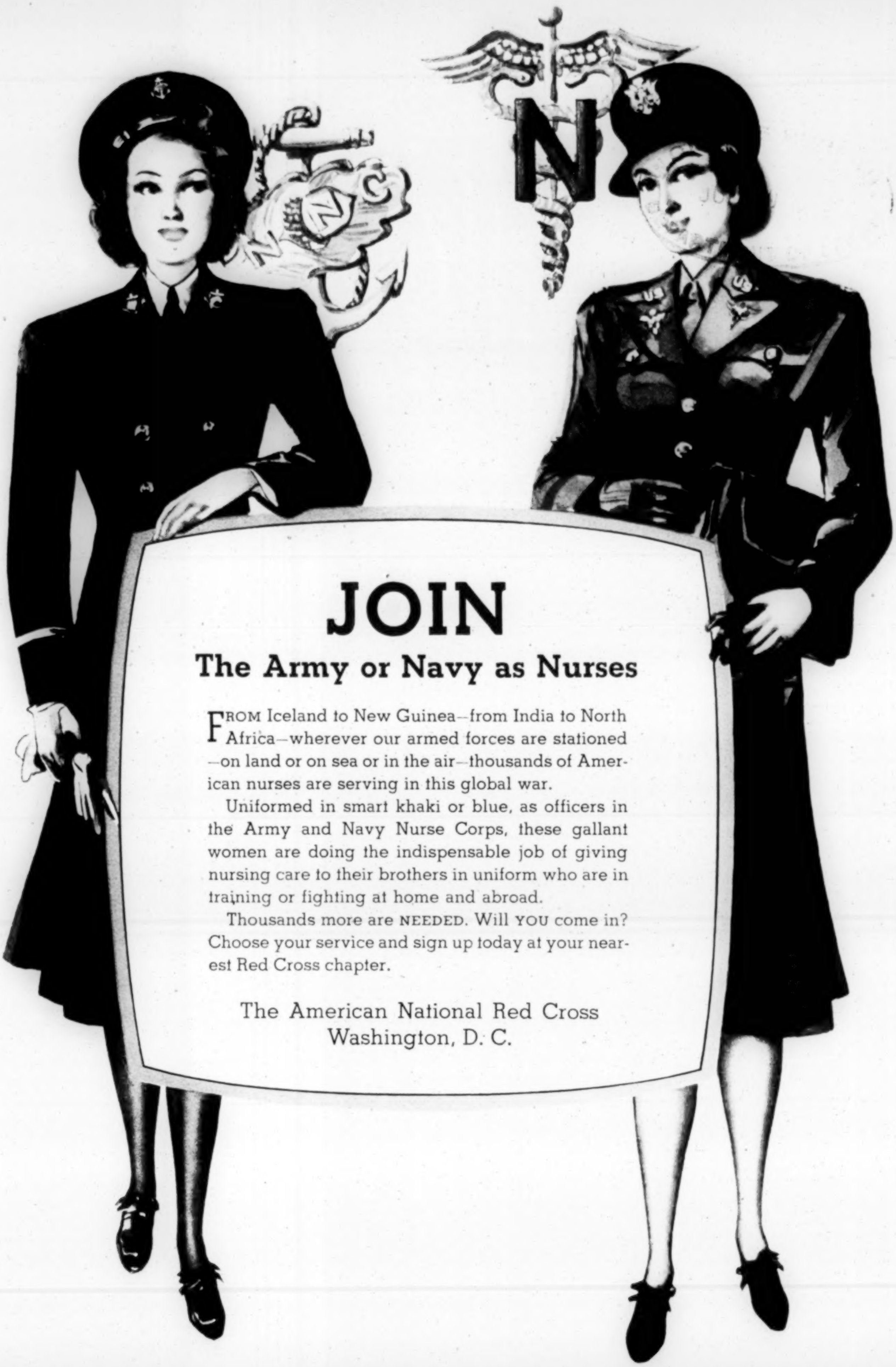
A Job to Be Done.
Mobilization of civilian manpower in England.

Yesterday Is Over Our Shoulder.
Recruiting mechanical workers from white collar class in England.

Welfare of The Workers.
What Britain is doing in health campaigns for workers in wartime.

The above films are available from New York University Film Library, New York City.

U. S. GOVERNMENT PRINTING OFFICE 16—33531-1



JOIN

The Army or Navy as Nurses

FROM Iceland to New Guinea—from India to North Africa—wherever our armed forces are stationed—on land or on sea or in the air—thousands of American nurses are serving in this global war.

Uniformed in smart khaki or blue, as officers in the Army and Navy Nurse Corps, these gallant women are doing the indispensable job of giving nursing care to their brothers in uniform who are in training or fighting at home and abroad.

Thousands more are NEEDED. Will YOU come in? Choose your service and sign up today at your nearest Red Cross chapter.

The American National Red Cross
Washington, D. C.

Soldiers and nurses await assignments to ships

Hospital ship nurses enjoy a breath of air

A snappy salute

Fun in the snow as Alaska nurses relax on their way to lunch

Shopping in North Africa involves a business deal with an Arab

No running water in New Caledonia

In the gleaming kitchen of a hospital ship

In an underground hospital shelter in Australia

NURSES!

Sign up for service with the Army or Navy Nurse Corps

The American Red Cross, as official recruiting agent of the Army and Navy Nurse Corps, has established recruiting stations in more than 400 chapters throughout the country. Nurses desiring to sign up for service with the armed forces may visit their local chapters or write to National Headquarters, American Red Cross, Washington, D. C., for information and application blanks.

S A Nº 1 UNION LABEL NEW YORK REGISTERED 34

ARC 1612
June 1943

FIGHTING MEN NE

What are the requi
Army and Navy

(above) Heroic Army nurses, escaped from Bataan, received decorations and personal greetings from the President through Mrs. Roosevelt at ceremonies in the Red Cross gardens at Washington, D. C.

(right) Air Force nurses, clad in heavy suits, ready to fly with wounded patients, evacuated from the fighting fronts

(left) Disabled soldier from North Africa, unable to use his burned hands, is made comfortable on a hospital train by a smiling Army nurse

ARMY **Qualifications**—Registered nurse, graduate of approved school of nursing. Age: Regular—22 to 30 years. Reserves—up to 45 years. High school graduate. Citizen of the United States or co-belligerent or friendly nations. Physically fit as determined by an Army medical board.

Marital Status—Married or unmarried. If married, nurses must provide for dependents outside the limits of the military reservation. If nurses marry while in service, they will be retained.

Uniforms—An entirely new wardrobe of uniforms and service clothing is ready for Army nurses in 1943. It includes an olive drab suit, cap with officer's insignia, white uniforms for domestic duty, cape, and overcoat with lining which does double duty as a bathrobe. Accessories are brown oxfords, brown kid gloves and brown seal utility bag. Insignia worn on the collar of street and duty uniforms is the Medical Corps caduceus with an N superimposed.

For Arctic duty a ski suit of olive drab is issued, consisting of a parka edged with fur and ski pants, both made of wind-resistant, water-repellent and reversible material, lined with insulating fabric.

For field operations, especially in tropical countries, a two-piece slack suit of olive drab herringbone twill, ankle-high service shoes and laced canvas leggings are issued.

NAVY **Qualifications** — Registered nurse, graduate of approved school of nursing. Age: Regular—22 to 30 years. Reserves—21 to 40 years. High school graduate. Citizen of the United States for at least the past ten years. Physically fit as determined by a Navy medical board.

Marital Status—Unmarried, widowed or divorced. If nurses marry while in service, they will be released.

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EED NURSES!

irements for the Nurse Corps?

niforms—Blue serge suit and overcoat conform in esign to those of men officers. The smart cap was esigned by an admiral. The summer uniform is hite with matching cap. Uniform allowances are ven to cover the cost of the purchase of winter d summer uniforms, white duty uniforms and ps, sweater, cape, white shirts, black ties, black d white shoes and stockings, gray and white oves. Insignia is the anchor and oak leaf with N C superimposed.

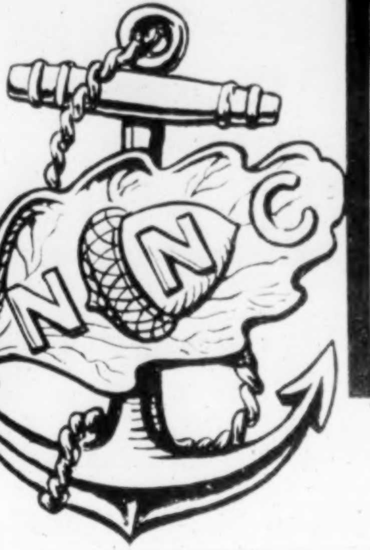
RANK AND SALARY FOR NURSES

ank—All nurses enter the Service with the relave rank of second lieutenant in the Army and nsign in the Navy. They are promoted as fast as eir training and ability warrant, provided posions of advanced responsibility are available.

lary—An act of Congress, signed by the Presient, December 22, 1942, authorizes a new pay hedule for service nurses. It provides, also, oney allowances for subsistence, rental of quarrs (where quarters are not available), mileage nd travel equal to those of commissioned officers, ithout dependents, of the regular Army and avy.

The act provides an increase of five percent of ase pay for each three years of service up to irty years; and for a ten percent increase of base ay during any period of service while on sea uty, or on duty in Alaska or in any place beyond e continental limits of the United States.

Title	Army	Navy	Annual Base Pay	Monthly Subsistence Allowance	Monthly Rental Allowance
upt.	Col.	Capt.	$4,000	$21.00	$105.00
sst. Supt.	Lt. Col.	Comdr.	3,500	21.00	105.00
sst. Supt.	Major	Lt. Comdr.	3,000	21.00	90.00
sst. Supt.	Captain	Lieut.	2,400	21.00	75.00
hief Nurse	1st Lieut.	Lieut. (j.g.)	2,000	21.00	60.00
urse	2nd Lieut.	Ensign	1,800	21.00	45.00



(above) Navy doctor and nurse, in crisp white, give such expert care to this third-class seaman that he soon will be able to return to his job on a battleship

(right) During off-hours, Navy nurses wander through the picturesque ruins of an old Spanish cathedral in Panama, where they are on foreign duty

LENGTH OF SERVICE—Nurses are appointed for the duration of the war and six months thereafter.

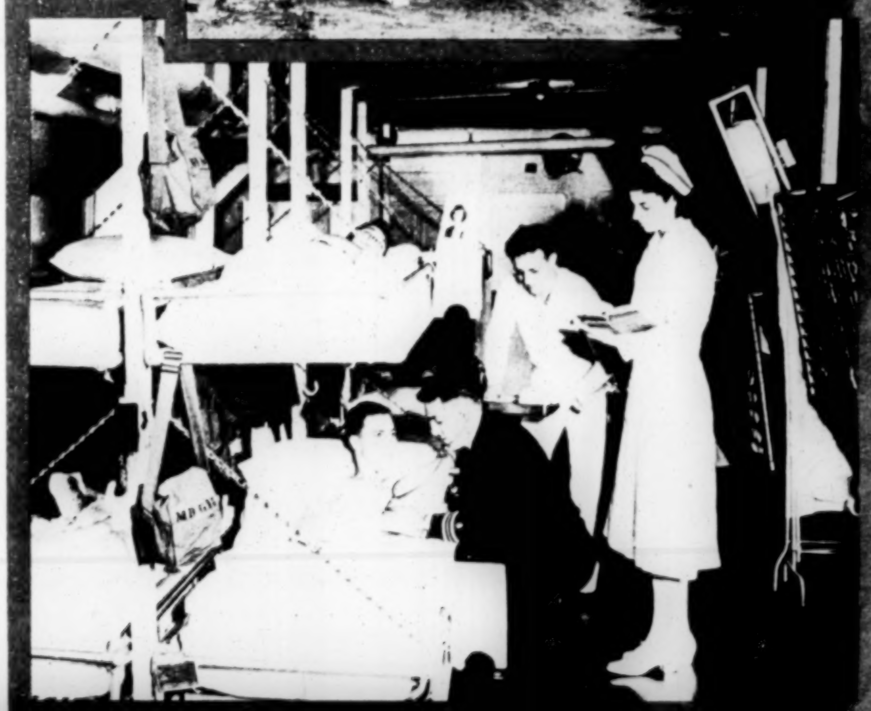
SPECIALTIES—Ten thousand nurses are needed by the Army Nurse Corps for service with the Army Air Forces. They will be assigned from the office of the Army Air Surgeon. A small proportion of them will be detailed to Air Evacuation Units to take charge of the sick and wounded who are carried from the fronts by air ambulances.

Nurses trained in surgery, anaesthesia, dietetics and psychiatry are assigned where their special skills can be used, whenever this is possible.

Army nurses serve on transports and in station and general hospitals in all lands where troops are fighting or are in training.

Navy nurses are assigned to hospital ships, transports and wherever the Navy is active abroad, as well as to naval hospitals in the United States.

Chief responsibility of Navy nurses is the teaching and supervision of the Navy corpsmen who do much of the nursing in naval hospitals and on board battleships.



(right) The S.S. *Relief*. In this immaculate floating hospital operations are performed on wounded men and emergency care is given

WASHINGTON POST - August, 1943

The Pegasus, Nov. 1943

Avenger's WASPs

FLY THE ARMY WAY IN PT-19s

THE Army Air Forces Women's Flying Training Detachment at Sweetwater, Texas, is a startling place where the pungent odor of grease blends incongruously with the essence of milady's perfume and powder and the scent of wild flowers on the sprawling Lone Star plains. For here, at Avenger Field, is the motherhive of the WASPs—Women's Air Force Service Pilots.

There's a subtle charm—and, for the Axis, a subtle threat—in the appearance of so much femininity in an activity about which there is such grimness and determination.

Whatever it is about Sweetwater, it's something that fills the visitor with an exciting sense of unreality.

A high-pitched voice shouts "Clear," and, where ordinarily one would expect to find an aviation cadet from Arkansas, he finds a former Powers model from New York, snug in the cockpit and pulling goggles down over her wind-squinted eyes.

An animate bundle, swathed in khaki coveralls topped by a leather helmet walks straightlegged like a man beneath the slap of a cumbersome parachute. The helmet comes off, long, red hair frames the face, a nose browned by the sun twitches, and a girl, of all things, says "Hi!"

Because the sight of a woman in an Army airplane is unprecedented; because the students at Sweetwater go about their work with a totally ungirlish drive; because the school is like its "mother," Jacqueline Cochran—and because of a lot of other things one must see to appreciate—that's why the WASP training detachment is an eye-opener of no secondary proportions.

But Army training for women fliers was a revolutionary sort of thing and most of the equipment was tied up in schools for male aviation cadets. The Houston unit began operations with a hodge-podge of plane types ranging from half-pint Cubs to cabin-style Stinsons.

AVENGER FI
AIR FORCE SERIAL NO

Jackie pointed out to the students that the setup, as yet, wasn't ideal but that "I'm working on things—go ahead and do your best." So the girls slipped off their skirts and climbed into odd-size coveralls. They lived in not exactly comfortable barracks; beat the sun to its morning draw. They forgot about men and dates and hairdo's. And they worked and flew like Jackie knew they could and would.

"Those first few weeks at Houston were harder, I know, than anything aviation cadets ever experienced," Jackie declares, principally from pride in her girls' stick-to-itiveness. "They didn't complain, though. They're the swellest kids in the world."

"Flip," Avenger black cat mascot, gets pampering from three girls in "zoot suit" coveralls

So well did that first class perform—to the frank surprise of instructors and Army officers who supervised the training schedule—that a lowering in entrance requirements met with the approval of all concerned.

Early prerequisites called for 200 hours flying time, but the revised requirements okayed the selection of applicants with 35 hours in the air or more. Those admitted must be between the ages of 21 and 34; must have high school educations or the equivalent; prove their American citizenship and pass the standard Air Forces physical examination. The final hurdle—and one of the most rigid—is a personal interview with Jackie or with one of her representatives. She wants, and gets, no students who are seeking a glamorous interlude.

Because the merit of the plan was being demonstrated, and because observers at Training Command headquarters in Fort Worth and high ranking officers from Washington were pleasantly surprised with the unflinching seriousness of the women students, better days began

They hang on every word of Group Commander C. Sproule giving informal flying tips in ready room

before the first class was much more than halfway through with its 22½ weeks of training. The physical layout at Houston was improved and Army primary, basic and advanced planes were dispatched to the scene of action. In addition, aviation cadets were moved from the civilian operated training detachment at Sweetwater and the school there was opened up for expansion in the women's program.

Members of that initial group were graduated on April 24. They received wings, generally similar to those worn by male members of the Air Forces, and left to enter active Civil Service duty with the Air Transport Command at $250 per month.

The entire detachment now has been shifted to Sweetwater. Houston's last class flew its own planes from that city to Sweetwater where it received its wings on May 28.

A day in the life of a Sweetwater WASP is no laughing matter. The girls live in tidy, but severely furnished barracks once occupied by the school's aviation cadets. There are six of them to a room. Each has a raw pine locker against the wall in which she must keep her clothes and all her belongings neatly arranged. While the sun is still struggling with the horizon, she must sweep and dust and make her bed. When she is through washing up, she folds her towel and washcloth and drapes them, according to the rules, on the foot of her bed.

AVENGER FIELD
AIR FORCE SERIAL NO 42-34046

"Take it solo," Instructor Hubert Hoogerwerf tells Joann Garrett, Avenger "cadette." Left— She's down—with flying colors and greeted by her instructor and a group of sister WASPs

She is permitted to have one photograph in the room. A small percentage display boy friends' pictures. However, most of them haven't the time nor the mood for such romantic pin-ups. If she has a radio, she must keep the plug out of the socket and the cord tucked away in a neat coil.

No longer can these war-women linger over the choice of a dress to don in the morning. There's a flagpole in the center of the barracks area and the type clothing to be worn is dictated by the color of the flag which is flown. If it's cold, the flag may designate a leather jacket over the coveralls. If there's to be no flying, the WASPs may be ordered—by an "insignificant hunk of colored cloth"—to get into their tan dress slacks and white shirts. Incidentally, if they forget to wear flight caps, they're considered out of uniform and there's always someone around to tell them as much. In the evenings they may wear dresses, and on weekends they go to their downtown club or to a dance attired in frilly evening frocks.

WASPs march to wherever they may be going. And they sing, too. Some of their songs are a bit gay—but very, very ladylike. In the mess hall, they go down the line, tin Army tray in hand, and help themselves. They eat like cottonpickers

(Continued on page 13)

YESTERDAY'S

"TOUCH OF TOMORROW"

WITH this issue THE PEGASUS *begins a series of stories about Fairchild —the historical events that led to the development of Fairchild airplanes, the engineering research that led to the perfection of Ranger engines. It is a human series, told by one of Aviation's pioneers, Richard H. Depew, Jr., who has been associated with Fairchild since its earliest days. A student of Maurice Farman, the pioneer French aeronaut, he received his pilot's license in* 1911 *and has flown virtually everything with wings since. He now heads the committee charged with the production of one of the Air Forces' vital training aircraft—the Fairchild "Gunner."*

By Richard H. Depew, Jr.

EARLY in 1925, at the time when the first Fairchild airplane was being constructed, the astronomers scheduled an eclipse. This eclipse, like most of the events calculated and foretold by these star-gazing gentlemen, came off on schedule.

I had peered at eclipses before. I had seen them through dark bottle glass and through just plain window glass blacked with candle smoke. But I viewed the 1925 solar phenomenon—from beginning to end—over the outskirts of New York at an altitude of 14,000 frigid feet.

It was a bitterly cold morning when four of us took off from Roosevelt Field —two pilot-photographer teams—to get the first aerial pictures of a total eclipse of the sun. E. P. Lott was flying Bob Smith in an old Fokker and I was piloting a Huff-Daland with A. O. Russell handling the camera. Our mission was to take pictures of every phase of the eclipse at the highest possible altitude and return them as fast as we could for developing and printing.

We were up there that bitter cold day because a young student at Harvard had taken an avid and scientific interest in the workings of cameras some eight or ten years before. After all, I guess that is where the story of Fairchild airplanes and Ranger aircraft engines really begins.

For if it had not been for Sherman M. Fairchild's interest in cameras and aerial photography—and if someone else had built an airplane from which aerial surveys could have been made under conditions short of torture—the Fairchild airplanes might never have been designed and built.

The exacting standards of flight established by Fairchild's aerial survey work in the early and middle 1920's demanded numerous technical improvements in airplanes which might otherwise not have been incorporated for years. These improvements were valuable not only for aerial mapping. This is best proved by the fact that at least half of the airlines in this country were started with Fairchild airplanes.

A Fairchild plane carried the very first load of international airmail for Pan American Airways, and later pioneered airplane routes in Mexico, China, and over the jungles of the Amazon. A Fairchild plane, "Stars and Stripes," flew with Byrd in the Antarctic in both of his expeditions.

Blast in Boston

Sherman Fairchild's first practical experiment in the field of automatic photography cannot be called a complete success—except in the measure of notoriety it gained him among certain adherents of the manly art of box fighting. He was a student at Harvard when he developed a device for synchronizing the operation of the camera shutter with the flash of flashlight powder.

The first Fairchild airplane, designed and built for

By dint of considerable argument, and after he had demonstrated the effect of a flashlight (with a modest amount of powder) he won the reluctant permission of the boxing overlords to conduct his experiment in the Boston Arena during a boxing match of some importance. He set up his camera equipped with his device and poured the magnesium powder into the pan of the flashgun.

With the utmost confidence in his calculations, he waited to catch a choice bit of action in the main bout. Just as one contestant was letting fly a haymaker, Fairchild tripped the release. The Arena was filled with lightning and thunder and smoke. The fight stopped. Both boxers were blinded by the light of the flash. Sparks smouldered in the bunting decorating the ring. The crowd, you might say, went wild.

Sherman Fairchild describes his exit thus: "I knew nothing really serious had happened so took advantage of the excitement to leave the building."

AVENGER'S WASPs
(Continued from page 7)

but they work just as hard, so bulging waists and hips are unheard of.

In class, they study navigation, theory of flight, weather, code, physics, and military courtesy. And in a special class on aircraft mechanics, they roll up their sleeves and pry into the innards of cylinders, brakes and ignition systems.

Although they have no actual military status as yet, they know a thing or two about "Yes sir" and "Yes mam" and when an officer enters their rooms they "pop to" and mind their military manners.

An hour each day, WASPs get a thorough work-out at calisthenics. It's tough sledding for a week or so until the neophytes get loosened up. An officer, who has earned his commission by being an expert at stretching other people's muscles, puts them through a deep-knee and push-up routine that would take the starch out of most men. If they conduct themselves like real lady athletes, they get to spend the last few minutes playing baseball or volleyball. The manner in which they slug the ball around Sweetwater's athletic field testifies to their "in the pink" physical condition.

Other periods find them on the drill field where tough-lunged Army officers administer the lessons of drill. Most of the WASPs did a bit of dancing in their pre-Sweetwater days so they apply the rhythm of the ballroom to by-the-right-flanks and to-the-rears. Their male tutors, extremely proud of their proteges, declare the majority of them catch on quicker than cadets.

Primary Flight

But it's on the flight line that the girls really enjoy themselves most. In the "ready room," before they go up, they sit cross-legged on the floor, sip cokes by the window or study training manuals, charts and maps on a big table in the center of the room. They talk at lot—but it's not tea-time conversation. It's all about flying.

When the new WASP arrives wide-eyed at Avenger Field, her first thoughts concern a certain silver and black, low-winged airplane, the Fairchild PT-19. From her barracks window, she watches the sleek primary trainers as other students take them into the blue. And the WASP has severe misgivings, because, chances are, the 19 is the biggest thing she's ever been about to fly. But she's in it and up with an instructor, almost by the time she gets her first lesson in how to make a bed soldier-style.

The WASP doesn't forget the PT when she moves on to basic and finally to advanced training. Most of them watch the 19's smooth belly as it mounts into the skyways and nine times out of ten the WASP will say to a pal, "Darn it, that airplane's a sweet thing. I'll be glad to get a crack at flying it again." And a lot of the girls do get another turn at the 19's controls. Scores of graduates have ferried the PT-19 across the nation to aviation cadet schools. They keep a fond place in their aeronautical hearts for the plane in which they first learned the Army way of flying.

Instructors are unanimous in their admiration for their lady pupils.

One of them admitted, "Sure I didn't like the idea of teaching women—when they first told me I was going to have to. But I like the idea now. These girls want to fly more than any other group I ever worked with. There's no foolishness up there in the air. They're careful about everything and are especially quick at getting onto their instruments." He added that some of the little WASPs have to be "hoisted" up on the seat with an extra pillow or two in order to be able to reach the controls easily.

Women Instructors

Possessor of unique places among those of the instructor fraternity are Avenger Field's five women sky-teachers. They are Maurine Miller, Dorothy Swain, Helen Montgomery and Jennie Gower, all PT-19 instructors, and Helen Duffy, the detachment's only feminine check pilot.

"Duffy," as her male associates know her, got the urge to fly in 1934 when she and a group of other air-minded students at Vermont's Mount St. Mary Academy attended a lecture by Amelia Earhart. In 1937, while working for an electrical appliance firm in New York, she earned her pilot's license. Later, she helped sell planes for a concern in New York, not only making the showroom approach but taking prospects out to the airport for demonstration hops in the ship of their choice.

The only other women on the Sweetwater staff are those who look after the students as "training supervisors." Mrs. Cliff Deaton, a small energetic, ex-swimming instructor, is chief establishment officer. With her assistant, Mrs. Hazel Hayes, she advises, encourages, suggests and serves as the sympathetic listener to those with personal troubles or complaints. Of particular concern to her are the wives, sisters and sweethearts of men on foreign duty. Among the WASPs are 152 with husbands or relatives in the Army Air Forces and 41 with kinsmen in the Naval Air Corps. More than 100 of the girls have members of their families in combat, 50 of whom are in action with the Air Forces.

"They're all anxious to do something to help their men," Mrs. Deaton remarked. "Besides, being here is good for them—they are keeping themselves well occupied."

Speaking about the "something to help" urge in the students, she added that the first thought of every girl who has been eliminated has been: "What can I do *now* to help win the war?" Several eliminees have asked to work at the base without pay—just to be near flying.

Common Bond

Sweetwater's girls represent a cross-section of every section and social group in the nation. There are tall, suave beauties from Manhattan, and red-headed misses from Nebraska. Some learned to fly with money given them by financially well-off parents or husbands. Others worked at a myriad of odd jobs in order to earn the cash needed to buy flying time. But at Sweetwater, personal dividing lines are missing. They are one in a common passion for aviation, and in that desire they have found a medium for friendship and understanding.

Another feeling experienced by all is their respect for the golden-haired woman who has championed their cause. Their Cochran-worship is almost a religion.

When she lands, she invariably walks immediately to her circle of smiling followers. She lights a cigarette and greets them like pals, calls many of them by their first names.

Miss Cochran makes no bones about her idea of woman's place in postwar aviation. She recently remarked to Major Robert K. Urban, the Army's veteran pilot who commands the Sweetwater school: "Women will never make peacetime transport pilots; I know they won't play an important role as fliers. But there's a job they can do today and I want them to get the chance they deserve.

"The principal boost they can give aviation is as mothers and wives. There'll be more women riding as air passengers tomorrow. It's on the homefront that their support of flying will be most valuable. I want all my girls, those at Sweetwater now and those who will follow them later, to raise families and make stable, happy homes for our men when this war is over. And I know that's what they want, too."

MILITARY SERVICE (WOMEN) - 1944

REPRODUCED AT THE NATIONAL ARCHIVES

REPRODUCED AT THE NATIONAL ARCHIVES

391

May 8, 1944

Miss Janice C. Knouse, Sgt.
WAC
Post Office Building
Abbeville, N.C.

My dear Miss Knouse,

In answer to your inquiry of May 4th, I suggest you write the British Embassy, the Netherlands Embassy, the Polish Embassy, [illegible] and of course the embassy offices for Canada, Australia, and the Union of South Africa, to find out about the service organizations for women in those countries. We do not have any published material on this.

Sincerely yours,

Mary Anderson, Director

rfn

REPRODUCED AT THE NATIONAL ARCHIVES

UNITED STATES ARMY RECRUITING STATION
OFFICE OF THE RECRUITING OFFICER

POST OFFICE BUILDING
ASHEVILLE, N. C.

IN REPLY
REFER TO:

4 May 1944

Women's Bureau
Department of Labor
Washington, D. C.

Dear Madam:

Do you have any printed material on the work that women of other countries are doing in the war? Particularly do you have any such on women's organization in other countries which might correspond to our WAC, WAVE, etc. It would certainly be appreciated if you have any of this if you could send copies to me. It would prove helpful in connection with Wac recruiting and also in some research work which I am doing.

Very truly yours,

Janice C. Knouse

JANICE C. KNOUSE, Sgt.
WAC

FOR VICTORY
BUY
UNITED STATES
WAR
BONDS
AND
STAMPS

REPRODUCED AT THE NATIONAL ARCHIVES

WAR DEPARTMENT
Bureau of Public Relations
Women's Section
Army Service Forces

IMMEDIATE RELEASE December 29, 1944

NOTHING OVERLOOKED TO RELIEVE WORKING MOTHER FROM WORRY

Trained teachers, expert supervision, scientifically planned meals and the best available play equipment have made a success of the month old day nursery opened by Fort Lewis, Washington, to get more mothers to take jobs at that Army installation. Lanham Act funds financed the project developed by the military authorities for their civilian personnel.

Regular visits by public health nurses, an isolation room for Susie's sniffles, monthly physical examinations, and emergency medical care at the post hospital are other features of this nursery which is open six days a week, 7:30 to 5 o'clock, at very nominal cost to the mothers.

WOMAN ARMY OFFICER GETTING BUSINESS EXPERIENCE

Operating a business amounting to approximately $20,000 a week with 135 employees on the payroll and 100,000 customers at the counters is the Army assignment for Captain Mae Dorothy Paige, a member of the Women's Army Corps from Southington, Connecticut. As assistant post exchange officer at Camp Butner, North Carolina, she is in charge of Food Service, a feature of the post exchange system at this installation. Before entering the Army, Captain Paige was a dietitian and restaurant operator.

Entirely separate from the subsistence activities in connection with the Army mess halls, food service conducts the cafeterias and soda fountains around the installation patronized by civilians for meals and by soldiers for in-between snacks.

Serving good food at low cost is the purpose of this non-profit Army enterprise that persons at work on the post may have proper nutriment without travelling miles away to get it. This food service each week uses 1700 loaves of bread, 1100 pounds of coffee, 7500 quarts of milk, 1500 dozen eggs, and some 25,000 sandwiches, of which the favorite kind is chicken salad.

ARMY INSTALLATIONS TO FIGHT LEGAL PRICE CONTROL VIOLATION

Civilian housewives organized to combat retail violations of the nation's laws regulating price controls will find ardent allies in the nearest Army camp, post, or station. Under a recent War Department regulation, commanding officers of all Army installations within continental United States have been charged with the responsibility of protecting military personnel against overcharging which is in violation of war time price statutes.

Broad powers are allowed the commanding officers to establish whatever procedures are deemed wisest for a specific area. This country wide move stemmed from a suggestion made by Corporal Milton G. Scribner, now of Camp Lee, Virginia and formerly of Providence, Rhode Island, that the Third Service Command set up price clinics. Through clinics made up from both enlisted and officer personnel, reports and handling of price violations are taken care of in Maryland, Virginia, and Pennsylvania, in so far as Army personnel is effected.

The two provisions of the regulation calling for action are as follows: (1) Liaison will be established with the nearest agency of the Office of Price Administration, complaints of overcharging will be promptly reported to such agency, and all reasonable cooperation will be extended to local officials to facilitate investigation and appropriate corrective action. (2) Effective publicity will be initiated in order to acquaint military personnel with the procedure established at each installation to handle complaints of this nature.

WOMEN TO WEAR ARMY OF OCCUPATION MEDALS

Only women entitled to wear the ribbon now being issued to personnel of the Army of Occupation of the First World War are members of the Army Nurse Corps. Centered with black representing the German colors, the ribbon is edged with red and blue stripes from the Star Spangled Banner, the medals for which it stands being a post-war distribution item.

Army authoritives have been deluged by letters of application for the ribbon since announcement of its creation a few months ago. Maximum number of Army nurses on duty at any one time in the Army of Occupation was 700, many of whom were still serving with the Army Nurse Corps at the opening of the present war. In December 1918 personnel from an evacuation hospital including 25 members of the Army Nurse Corps proceeded by ambulance to Trier, Germany to take over a German hospital for use of the American Army of Occupation.

Soon afterwards several similar installations were established in Germany in effect doing the work of advanced base hospitals.

Nurses, still in the service or retired, remembered as having been on duty in Germany are: Lieutenant Colonel Lyda M. Keener, Wilkinsburg, Pennsylvania, formerly chief nurse at Walter Reed General Hospital, Washington, D. C., First Lieutenant Estelle Hine, San Leandro, California; First Lieutenants Josephine Kennedy and Florence Bailey, Washington, D. C.; Captain Margaret Riley, Dorchester, Massachusetts; First Lieutenant Ann B. Carlson, Arcadia, California; and Captain Edna M. Beyrer, San Francisco, California.

At the time the Army of Occupation was busy in Germany, the Army Nurse Corps did not have military rank. In June, 1920, the Corps was granted relative military rank which became this year real military rank for the duration.

return to MR

WAR DEPARTMENT
Bureau of Public Relations
Women's Section
Army Service Forces

IMMEDIATE RELEASE December 27, 1944

EARLY MORNING HAPPY BIRTHDAY

Unique birthday gift recently presented to a woman Army officer by the eight civilian women on her staff was a hearty breakfast, from fruit to cinnamon squares. It happened to Lieutenant Anna Belle Peshek, Women's Army Corps member from Denton, Nebraska, now assistant adjutant at the War Department Personnel Center, Fort Lewis, Washington, because on other days of the year, she needs to take a light breakfast to be at her post of duty by 7:30 o'clock in the morning

THANKS FROM THE ARMY FOR USO STATEMENT OF APPRECIATION

Prompt expressions of thanks for the recent USO salute to America's service women have been forwarded by the Army's two women colonels to Mrs. Pearl Case Blough, Director of USO Services to Women and Girls.

Colonel Florence Blanchfield, Army Nurse Corps, and Colonel Oveta Culp Hobby, Women's Army Corps, bespoke the acclaim of their respective organizations for the "testament of gratitude and faith" voiced by the Committee on Service to Women and Girls of the USO to the women of the armed forces of the United States.

Copies of the USO statement of appreciation were sent official heads of the WACS, WAVES, SPARS, Women Marines, the Army Nurse Corps, and the Navy Nurse Corps. Also receiving copies were the six member agencies of the USO—the YMCA, the National Catholic Community Service, National Jewish Welfare Board, YWCA, the Salvation Army, and the National Travelers Aid Association.

Thirteen other groups to receive the statement were: Joint Army and Navy Committee, Office of Community War Services, American Association of University Women, American Red Cross, American Women's Voluntary Services, General Federation of Women's Clubs, National Council of Negro Women, Congress of Industrial Organizations, National Panhellenic Congress, National Congress of Parents and Teachers, National Federation of Business and Professional Women's Clubs, American Legion Auxiliary, and Office of Civilian Defense.

The statement of appreciation was as follows:

"For your patriotism in volunteering your services, for your efficiency in your work, thus releasing thousands of men for combat duty and thereby hastening the day of victory, we salute you!

"The nation owes a debt of gratitude to you who are WACS, WAVES, SPARS, Women Marines, and the Army and Navy nurses for your admirable devotion to your country. You share with the other brave servicewomen of the United Nations the achievement of having met well the challenge of preserving liberty and democracy in the world. Please accept this, our testament of gratitude and faith."

ARMY'S FIRST NATIONAL ART EXHIBIT TO HAVE WOMEN EXHIBITORS

Women artists of the Army, enlisted and officer personnel, will be represented in the nation's most ambitious soldier art exhibit to open next Fourth of July at the National Gallery of Art, Washington D. C. For the first time in its history, the Army of the United States will conduct a country wide contest in painting, sculpture, arts of design, graphic arts, and photography.

Best productions from eight classes in the general groups in each military installation will be forwarded to each of the nine service commands for judging at that level. Thirty of the entries from each of the nine service command exhibits will be sent to Washington for the national judging, the thirty being made up by the addition of outstanding works from the various classes to the eight winners. Suitable awards will be made the artists, the national exhibit closing August 15, 1945.

Present plans indicate a committee of military and civilian persons known to be experts in some branch of the arts concerned in the contest, will be named in each service command to arrange for the place and procedures of installation for the service command exhibitions. No limit has been placed on the subject matter of the entries, within the choosen classes of oil paintings, tempera, water colors, gouache, mural design, sculpture renderings, city planning and interior designs, landscape and stage designs, drawings, (any media), lithograph, etching, silk screen and photographs.

Purpose of the Army Arts Contest is to stimulate the ever increasing awareness of arts and crafts as a prime leisure time activity for the armed forces and to acknowledge the creative talents among the men and women in khaki. Installation contests—camps, posts, and stations—are expected to be concluded by February and the service command displays will be in full swing by the middle of the following month.

This is a project of the Special Services Division, Army Service Forces, through its Arts and Crafts Section.

In camps throughout the country, soldier artists have been encouraged to depict their impressions of military life and experiences, under the stimulus of the Special Services Division of the Army. These works have been exhibited at the posts and nearby communities. Booklets have been printed reproducing the cream of the display. Soldiers doing scenery for camp shows, studying in art groups, making posters for special events, giving chalk talks to amuse their buddies, painting murals on mess hall walls,—all of these activities were part and parcel of the Army's recreation program before Pearl Harbor.

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WOMEN'S BUREAU
DEC 2[illegible] 1944
DEPARTMENT OF LABOR

Whitelock -

ENROLLMENT FIGURES

	Total Enrollment	Enrollment Overseas
Army Nurse Corps	(over 40,000)	28,000 (Overseas or assigned for overseas duties)
Dietitians	1,475	50% (Approx.) 732
Physical Therapists	1,000	50% (Approx.) 500
WACS	85,000	11,000
	127,475	40,232

November 1944

From Women's Section
ASF Group, Bureau of Public
Relations, War Dept.

O — Apprx.No.Waves - over 82,000 -- infm.from Miss Wild, Women's Reserve Div.Ex.7411
(exact 82761 of 11/30/44)

" " marines - 17,640 of Nov.1,1944

" " spars - 8,159 of 6/30/44

" " Nurses - 8,000 of Apr.1944

116,560
125,600 Army,
242,[illegible]

Approx.women in Army (nurses, wacs, phys.ther.etc.) - 125,600 of 12/23/44

1144
Flower Ave 10th & D.

#Spanish Embassy#

Christmas Eve

Called Summerlin private citizen

~~130,000~~ army - includes nurses, wacs, phy ther

approx.
126,500 women in army

Women's Reserve Div
7411

Jan. 4 evening
Willard

new women of Congress

Lt. Brown - press of navy

Navy Pub Relations
Navy Personnel
7171

Miss Wild

over
82,000 enlisted & officers of waves

Overall figures

Ex 7956 ← Marines
Capt McDonald

Spars

2282

Waves ✓

Nurses

Du Bose -

Nov. 30 - total enrollment 82,761 of Waves.
Nov 1 - Marines - 17,640
Spars 8,159
June 30 - Nurses
april -

Nurses [redacted] Navy Nurse Corps
cf. 3631

Spars
cf 2282

Waldron - WMC 3406-7 Mrs Miller Robinson PM - 4717

WAR MANPOWER COMMISSION

WOMEN'S BUREAU
NOV 2 [illegible] 1944
DEPARTMENT OF LABOR

For Immediate Release
Wednesday, November 22, 1944

Cleared and Issued
Through Facilities of the
Office of War Information

As a result of a critical shortage of nurses in the U. S. Army, the War Manpower Commission Procurement and Assignment Service has sent telegrams to all State procurement and assignment committees requesting that additional names of nurses be made available to the American Red Cross for recruitment purposes, Paul V. McNutt, WMC Chairman, announced today.

Stating that he had been informed that 10,000 nurses must be recruited for the Army immediately in order to care adequately for wounded and sick soldiers overseas and at home, Mr. McNutt said the committees have been asked to cooperate with Nursing Councils for War Service in meetings of nurses in 25 of the country's larger cities at which the seriousness of the Army's nursing needs will be explained.

Mr. McNutt said that he had been informed by Maj. Gen. Norman T. Kirk, Surgeon General of the Army, that the Army's need for more nurses has been heightened by the activation during November of hospitals it had not been expected to organize before next March. This is due, Mr. McNutt said he was informed, to the activity on all war fronts and the ever-increasing number of battle casualties.

The Veterans Administration, Mr. McNutt said, is also experiencing a serious need for additional nurses. About 1,000 additional nurses are urgently required to care for the growing number of service men in Veterans Administration hospitals, he said.

The Navy, Mr. McNutt said, will continue to need about 500 nurses a month for several more months.

"Our nurses who have already responded to the needs of the services are doing a splendid job, but many more than are at present enrolled are needed," said Mr. McNutt. "I would like to see every nurse who has been declared available for military service respond to this call. I would also like to see every young nurse now graduating who can do so offer her services."

WMC pointed out that nurses who enter the services are commissioned, and at the end of the service, will enjoy all rights extended to the armed forces under the G. I. Bill of Rights.

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X-36036

Nyswander ~~[illegible]~~

ADVANCE RELEASE ADVANCE RELEASE

Page--74411 NB-2714

OFFICE OF WAR INFORMATION

This report, prepared by the Office of War Information, is designed to meet the various needs of editors, writers, commentators, broadcasters, photographers, and others concerned with presenting the news. It may be reproduced in its entirety, excerpted, condensed or used as background and reference material.

ADVANCE RELEASE: For Sunday Papers, August 20, 1944.

Awards and citations have been given to a total of 105 women in the armed services of the United States to date, the Office of War Information said today, on the basis of data supplied by the Army and the Navy.

By far the largest number of awards went to women of the Army Nurse Corps, 97 of whom have received various awards and citations. These range from the special Presidential Citation for nurses who served on Bataan Peninsula, during the battle for the Philippines, to the Silver Star for gallantry--four of these--and the Soldier's Medal for personal heroism, of which two have been given to WACS and four to Army nurses. The highest award ever made to a woman, the Distinguished Flying Cross, was given to a flying Army nurse in New Guinea.

The Legion of Merit, a new award ranking above the Silver Star - but below the Distinguished Service Medal, has been awarded to 9 women, one of whom serves in the Navy. Two Army nurses also were honored posthumously by having hospital ships named for them.

Among the flying nurses, there have been 29 awards of the Air Medal, 11 of them with four oak leaf cluster awards, for series of flights in combat areas. The Purple Heart, for wounds, has been given to 24 Army nurses and four WACS. A number of the nurses were hurt during the Anzio-Nettuno beachhead fighting.

The lists of awards and citations follow, together with some details of the citations:

Awards, in the order of their importance (Army or Navy nurses unless otherwise specified):

Distinguished Flying Cross

Dial, Kathleen R., 1st Lt., Army Nurse Corps; Station: Air Evacuation Transport Squadron; Home: Florence, Ala. "for making a crash landing in June on a beach at Fisherman's Island, off Port Moresby, New Guinea, in a plane being returned from the front lines with 18 mental patients aboard. She directed the removal of her charges from the plane before collapsing." Also awarded Air Medal and the Purple Heart.

Legion of Merit: Navy

Bernatitus, Anna, Chief Nurse (Lt. j.g.), Navy; "for exceptionally meritorious service in Manila and Bataan." Station: Great Lakes Naval Hospital, Ill., Home: Exeter, Pa. Also the Distinguished Merit Badge, and Presidential Citation for Services on Bataan, Philippine Islands.

Legion of Merit: Army

Aaron, Margaret A., Lt. Col.; Home: 621 No. 6th St., Allentown, Pa.

Asson, Elma L., 2nd Lt.; Station: Tripler General Hospital, Hawaii; Home Los Angeles, Calif.; "She had just completed her normal duty as night-nurse when the Japanese aerial attack on Oahu occurred, December 7, 1941. She immediately reported to the operating room where she rendered exceptionally meritorious service as a surgical nurse, working day and night duty."

Carraway, Maude E., 1st Lt.; Station: Ft. Greeley, Kodiak, Alaska; Home; Merrimon, N.C.; "for ability displayed in organization and administration of the ANC in Alaska."

Clearwater, Helen, Capt.; Station: Rhodes General Hospital; Home: 48 Pine St., Kingston, N.Y.; "for outstanding performance as chief nurse, North Sector General Hospital during the Japanese attack on Hawaii, and for months that followed."

Goforth, Anna Louise, 2nd Lt.; Station: Fitzsimmons General Hospital, Denver, Colo.; Home: Seymour, Ind.; "for her services as surgical ward nurse during the Sicilian campaign."

Pesut, Elizabeth A., 1st Lt.; Station: Tripler General Hospital, Hawaii.; Home: 737 N. Haugh St., Indianapolis, Ind.; "for her supervision of the operating room on December 7, 1941."

Sullivan, Mary Ann, 1st Lt.; Station: ---th Surgical Hospital; Home: 57 Fenwood Rd., Boston, Mass.; "for supervision of the operating room and her foresight in preparing surgical supplies during the Tunisian campaign."

Swenson, Rosalie L., Capt.; Station: Army and Navy Hospital, Hot Springs, Ark.; Home: 3828 N. Monticello Ave., Chicago; "although quite ill at the time of the Japanese aerial attack on Oahu, she reported for duty and rendered great service to the battle casualties."

Silver Star: Army

Roe, Elaine Arletta, 2nd Lt.; Station: Camp Cook, Calif.; Home: RFD #3 Box 91, Whitewater, Wis.; "for gallantry in action during shelling of a hospital in Italy, evacuating 42 patients."

Roberts, Mary L., 1st Lt.; Station: ---th Evacuation Hospital; Home: 1205 N. Bishop St., Dallas, Tex.; "While working as operating room chief nurse, the tent was bombed and all equipment damaged. By her leadership, the operations continued uninterrupted."

Rourke, Rita Virginia, 2nd Lt.; Station: Camp Cook, Calif.; Home: 5445 Dorchester Ave., Chicago, Ill.; "for gallantry in action during shelling of a hospital in Italy, evacuating 42 patients."

Truax, Marjorie S., 2nd Lt.; Station: Ft. Dix, N.Y.; Home: RFD #3, Worcester, N.Y.

Soldier's Medal: Army Nurses

Greenwood, Edith, 2nd Lt.; Station Hospital, Desert Training Center; Home: 38 Hill St. Rockaway, N.J., "saved a soldier from drowning and administered first aid."

Dahl, Christine Catherine, 2nd Lt.; Station: Percy Jones General Hospital, Battle Creek, Mich.; Home: 3026 S. California Ave., Chicago, Ill.; "for administering first aid to occupants of a heavy aircraft that had crashed."

Decker, Margaret, 2nd Lt.; Station: Tilton General Hospital, Fort Dix, N. J.; Home: 38 Hill Street, Rockaway, N. J., "For administering first aid to occupants in a heavy aircraft that had crashed."

Stephanson, Orah D., 1st Lt.; Station Hospital, Morris Field, Charlotte, N. C.; "for saving a nurse from flames in nurses quarters."

Soldier's Medal: WACS

Ford, Mary Jane, Pfc.; Station: Ft. Meyer Va.; Home: Los Angeles, Calif.; "at the risk of her life, she attempted to save a drowning soldier at Camp McCoy, Wis., and succeeded in recovering his body."

Maloney, Margaret H., Pvt.; Home: Rochester, N.Y.; "at the risk of her life, she dragged a soldier from a pool of flaming gasoline and beat out the flames on his clothing with her bare hands."

Bronze Star: Army Nurses

Baltzer, Katherine C., 2nd Lt.; Station: ---th Evacuation Hospital, Ft. Sam Houston, Tex.; Home: 1423-16th., Monroe, Wis.

Combites, Inez E., 2nd Lt.; Same station; Home: Wagoner, Okla.; "for operating room achievement during bombing attack on Anzio-Nettuno beachhead."

Cook, Cordelia E., 1st Lt.; Station: Ft. Thomas, Ky.; Home: North Ft. Thomas Ave., Ft. Thomas, Ky.; "The first woman in history to receive this medal, the first to be awarded twice." Awarded Purple Heart also.

Craig, Rose C., 1st Lt.; Station: ---th Evacuation Hospital, Ft. Sam Houston, Tex.; Home: RFD #5, Box 237, Dallas, Tex.; "for operating room achievement during a bombing attack on the Anzio-Nettuno beachhead."

Donnis, Thelma, 1st Lt.; Same station; Home: McKenney, Tex.; same action as above.

Dickson, Grova Nelle, 2nd Lt.; Same Station Hospital, Ft. Sill, Okla.; Home: 5½ Ft. Still Blvd., Lawton, Okla.

Dupont, Isabelle, 2nd Lt.; Station: ---th Evacuation Hospital, Ft. Sam Houston, Tex.; Home: 120 Summer St., Lee, Mass.

(over)

Huffman, Isabelle, 2nd Lt.; Station: Camp Kilmer, N. J.; Home: 1634 Jackson Blvd., Chicago, Ill.; "for outstanding achievement on 22 March, 1944, on Anzio beachhead."

Lee, Maude Lonnette, 2nd Lt.; Station: ---th Evacuation Hospital, Ft. Sam Houston, Tex.; Home: Ringgold, La.

Miernicke, Frances A., 2nd Lt.; Home: 2766 Wellington St., Duluth, Miss.; "for duty in the operating room when artillery shells fell in the area of Anzio beachhead."

Smith, Anna M., 2nd Lt.; Station: Ft. Knox, Ky.; Home: Martins Ferry, Ohio; "for operating room achievement during a bombing attack."

Spillman, Anna H., 2nd Lt.; Station: ---th Evacuation Hospital, Ft. Sam Houston, Tex.; Home: Jackson, La.; RFD #1.

Wood, Sue Elva, 2nd Lt.; Station: Camp Brekinridge, Ky.; Home: Ft. Riley, Kan.; "for duties performed on 20 October, 1943, in Italy."

Zadylak, Anne Stella, 1st Lt.; Station: Ft. George G. Meade, Md.; Home: 319 Graft St., Everson, Pa.; "for heroic achievement in action on 29 March, 1944, near Anzio, Italy."

Air Medal: Army Nurses

Ahlgren, Edith D., 2nd Lt.; Station Hospital, Chanute Field, Ill.; Home: Hudson, Wis.; four oak leaf clusters, also.

Barnes, Ruth V.; 2nd Lt.; Home: Reynolds, Ill.; three oak leaf clusters, also.

Boisvert, Joyce V., 2nd Lt.; Station Hospital, Chanute Field, Ill.; Home: Champion, Mich.; four oak leaf clusters, also.

Bouwhis, Gerda H., 2nd Lt.; Station: Bowman Field, Ky.; Home: 208 E. Maple St.; Kalamazoo, Mich.; one oak leaf cluster, also.

Brown, Regina Mortimer, 2nd Lt.; Station: Bowman Field School of Air Evacuation; Home: 516 Luna Blvd. Albuquerque, N. M.

Conerly, Cora E.; 2nd Lt.; Station: Air Evacuation Group, Bowman Field, Ky.; Home: Tylertown, Miss.; four oak leaf clusters, also.

Cooling, Agnes, 2nd Lt.; Station Hospital, Chanute Field, Ill.; Home: Chicago, Ill.; one oak leaf cluater, also.

England, Adelaide M., 2nd Lt.; Station: 349th Evacuation Group, Bowman Field, Ky.; Home: RFD #1, Collegeville, Pa.

Forgey, Dixie M., 2nd Lt.; Station: Albuquerque, N. M., Home: Miles City, Mont.; one oak leaf cluster, also.

Ganzbuhl, Anna A., 2nd Lt.; Station Hospital, Chanute Field, Ill.; Home: Joliet, Ill.; four oak leaf clusters, also.

Gustafson, Wanda., 2nd Lt.; Station Hospital, Camp Stoneman, Calif.; Home: Kane, Pa.; four oak leaf clusters, also.

Grinevich, Matilda D., 2nd Lt.; Station Hospital, Camp Stoneman, Calif; Home: Mahonay City, Pa.; two oak leaf clusters, also.

Jones, Jeraldine E., 2nd Lt.; Station: 801st Medical Squadron Air Evacuation, Bowman Field, Ky.; Home: Lock Haven Pa.; four oak leaf clusters, also.

Kobach, Ethel R., 2nd Lt.; Station Hospital, Chanute Field, Ill.; Home: Bad Axe, Mich.; one oak leaf cluster, also

Kolitsch, Catherine H., 2nd Lt.; Station Hospital, Chanute Field, Ill.; Home: Appleton, Wis.; four oak leaf clusters, also.

Laiso, Beryl A., 2nd Lt.; Station Hospital, Chanute Field, Ill.; Home: Homewood, Ill.; three oak leaf clusters, also.

Lund, Leona S., 2nd Lt.; Station: Bowman Field, Ky.; Home; Canby, Minn.

Mackin, Elizabeth M., 2nd Lt.; Station Hospital, Chanute Field, Ill.; Home: Wautosa, Wis.; four oak leaf clusters, also.

Muckerheide, Mary M., 2nd Lt.; Station Hospital, Chanute Field, Ill.; Home: Milwaukee, Wis.; four oak leaf clusters, also.

Olson, Mae E., 2nd Lt.; Station: Air Evacuation Group, Bowman Field, Ky.; Home: Little Falls, Minn.; four oak leaf clusters, also.

Ott, Elsie S., 2nd Lt., India station, first nurse to receive air medal; Station: 349th Air Evacuation Group; Home: St. James, Long Island.

Petrocelli, Seraphine V., 2nd Lt.; Station Hospital, Chanute Field, Ill.; Home: Chicago, Ill.; two oak leaf clusters, also.

Richey, Margaret A., 2nd Lt.; Station Hospital, Bowman Field, Ky.; Home: Georgetown, Tex.; three oak leaf clusters, also.

Ross, Martha E., 2nd Lt., Station: 801st Air Evacuation Hospital Squadron; Home: Guelph, N. D.

Shikoski, Dorothy P., 2nd Lt., Station: 801st Air Evacuation Transport, South Pacific theater; Home: Green Lake, Wis.; four oak leaf clusters, also.

Siuda, Lucille M., 2nd Lt.; Station Hospital, Chanute Field, Ill.; Home: Chicago, Ill.; three oak leaf clusters, also.

Stensrud, Burnette I., 2nd Lt.; Station: 149th Air Evacuation Group, Bowman Field, Ky.; Home: Freeborn, Minn.; one oak leaf cluster, also.

Sullivan, Elizabeth M., 2nd Lt.; Station: Air Evacuation Group, Bowman Field., Ky.; Home: Springfield, Ill,; one oak leaf cluster, also.

(over)

Purple Heart: WAC

Galyon, Leona J., Pvt., Odessa, Tex., injured in a robot plane accident.

Gibbons, Effie M., Pfc., Lewiston, Idaho, same.

Johnson, Margaret, Pvt., Madison, Wis., same.

Whitfield, Dorothy, Pfc., Schenectady, N.Y., same.

Purple Heart: Army Nurses

Ainsworth, Helen, 2nd Lt.; Station: 56th Evacuation Hospital, Ft. Sam Houston, Tex.; Home: Glenwood City, Wis.

Barton, Irene Virginia, 2nd Lt.; Station: Camp Gordon, Ga.; Home: 420 Summit Ave., Anderson, S.C.

Buckley, Ruth D., 2nd Lt.; Station: Camp Breckinridge, Ky.; Home: Elmwood, Wis.

Doyle, Claudine S., 2nd Lt.; Station: ---th Evacuation Hospital, Camp Breckinridge, Ky.; Home: 717½ N. Main St., Wichita, Kan.

Fox, Annie G., Capt.; Station: Walter Reed General, Washington, D.C.; Home: Beverly, Mass. first army nurse to receive this medal in this war.

Harrison, Mary W., 2nd Lt.; Station: Camp Harahan, La.; Home: 210 Walnut St., Belpre, Ohio.

Hindman, Laura R., 2nd Lt.; Station: Camp Claiborne, La.; Home: 720 Ferndale Ave., Johnstown, Pa.

Hoppe, Ruby L., 2nd Lt.; Station: ---th Evacuation Hospital, semi-mobile, Italy; Home: Friedheim, Mo.

McCullough, Helen A., 2nd Lt.; Station: ---th Evacuation Hospital, Ft. Sam Houston Tex.; Home: 500 Beebe St., Wichita, Kan.

Mills, Gertrude E., 2nd Lt.; Station: ---th Evacuation Hospital; Home: Box 153, Pine Island, N.Y.; for injuries received at the sinking of the "Newfoundland."

Morrow, Marjorie Gertrude, 2nd Lt.; Station: Ft. Warren, Wyo.; Home: Audubon, Iowa, posthumously.

Nolan, Agnes, 2nd Lt.; Station: --th Evacuation Hospital, Ft. Sam Houston, Tex.; Home: Oakland, Ill.

Nolan, Madonna, 2nd Lt.; Station: ---th Evacuation Hospital; Home: Oakland, Ill.; for injuries received at the sinking of the "Newfoundland".

Raymond, Frances V., 2nd Lt.; Station: ---th Evacuation Hospital, Ft. Sam Houston Tex.; Home: 1302 Travis, Wichita Falls, Tex.

Purple Heart: Army Nurses

Sawetski, Irene M., 2nd Lt.; Station: Camp Shanks, Orangeburg, N. Y.; Home: Wanamie, Pa.

Sheetz, Carrie T., 1st Lt.; Station: Evacuation Hospital, Camp Breckinridge, Ky., Home: 320 N. 25th Street, Camp Hill, Pa.

Sigman, Blanche F., Home: Box 32, Rt. #3, East Akron, Ohio. Posthumous award. Hospital ship named for her, also.

Sobeck, Ruth Catherine, 2nd Lt.; Station: Camp Lee, Va.; Home: Cokesville, Pa.

Spelhaug, Glenda Serene, 1st Lt.; Station: Ft. Lewis, Wash.; Home: Crosby, N. D., posthumously.

Visti, Ina M., 2nd Lt.; Station Hospital, Ft. Knox, Ky.; Home: 507 Independence St., Fairport Harbor, Ohio.

Wheeler. Isabelle Lee, 2nd Lt.; Station: ---th Evacuation Hospital, Ft. Sam Houston, Tex.; Home: Blanchard, Iowa.

Wingerd, Fern H., 2nd Lt.; Station: Camp Breckinridge, Ky.; Home: 204 S. 25th St., Omaha, Neb.

The Presidential Citation, givento nurses who served on Bataan, is a special award, and as such is not rated in sequence with the regular medals and awards of the Army and the Navy. This decoration is worn on the right side. Following is a list of the Army nurses honored by the President's Special Citation;

Daley, Dorothea M., 1st Lt.; Station: Army and Navy General Hospital, Hot Springs, Ark,; Home: 1630 Gum Street, North Little Rock, Ark.

Gastinger, Leona, 1st Lt.; Station: Walter Reed General, Washington, D. C. Home: Hotel Meuhlebach, Kansas City, Mo.

Hallman, Grace D., 2nd Lt.; Station: Melbourne, Australia; Home: 717 Fisk St., Jacksonville, Fla.

Hatchitt, Eunice, 1st Lt.; Station: Army Medical Center; Home: Rosanky, Tex.

Lee, Harriet G., 1st Lt.; Station: Army Medical Center; Home: Hot Springs, Ark.

Lohr, Mary G., 1st Lt.; Station: Ft. Mill, P.I.; Home: 15 Clopper Ave., Greensburg, Pa.

MacDonald, Florence, Maj.; Station: Ft. Stotesenburg, P.I.; Home: Antigouish, Nova Scotia.

Moultrie, Mary L., 1st Lt.; Station: Jefferson Barracks, Mo.; Home: Woodbury, Ga.

(over)

Petersen, Mollie, 1st Lt.; Station: Robins Field, Ga.; Home: Crystal Route, Hot Springs, Ark.

Redmond, Juanita, Maj.; Station: Lakeland Air Base Hospital, Fla.; Home: Swansea, S. C.

Stevens, Mabel V., 1st Lt.; Station: Walter Reed General Hospital, Washington, D. C.; Home: Creighton, Neb.

Straub, Ruth M., 1st Lt.; Station: Walter Reed General Hospital, Washington, D. C.; Home: 2602 N. First St., Milwaukee, Wis.

Summers, Helen L., 2nd Lt.; Station: Walter Reed General Hospital, Washington, D. C.; Home: 5935 Palmetto St., Brooklyn, N. Y.

Vesley, Beth A., 1st Lt.; Station: Walter Reed General Hospital, Washington, D. C.; Home: 660 Coe Ave., San Jose, Calif.

Wilson, Lucy I., 1st Lt.; Station: Bowman Field, Ky.; Home: Big Sandy, Tex.

In another special honor, awarded posthumously, Major Emily H. Weder, of the Army Nurse Corps, who served in the Philippines, has had a hospital ship named for her. Major Weder's home was in Sellersville, Texas.

Commendation: WAVES

The first Wave to receive a military decoration was Lt. Elizabeth Reynard, who received a letter of commendation, with the Commendation Ribbon, "for substantial contributions to organization and training methods in Recruit Training School, Bronx., N.Y." Her home is 460 Riverside Drive, N.Y.

END OF ADVANCE RELEASE: For SUNDAY Papers, August 20, 1944

###

Nurses

ADVANCE RELEASE ADVANCE RELEASE

Waldron - WMC 3406-7 PM-4628

WAR MANPOWER COMMISSION

ADVANCE RELEASE:
For Tuesday Morning Papers
July 18, 1944

Cleared and Issued
Through Facilities of the
Office of War Information

The War Manpower Commission, through its Procurement and Assignment Service, in cooperation with the American Red Cross, has launched a campaign to recruit at least 8,500 nurses for the U.S. Army and U.S. Navy, WMC Chairman Paul V McNutt announced today.

The nurses, the WMC chairman said, will be recruited at the rate of 1,000 a month for the Army and 500 a month for the Navy, until a total of 5,500 have been recruited for the Army and 3,000 for the Navy.

Mr. McNutt said most of the nurses needed by the Army and Navy will be drawn from lists of nurses maintained by State committees under which nurses are "classified" on a voluntary basis as "available" for military service "after giving consideration to essential civilian services." A portion of the required number of nurses will be recruited from the U.S. Cadet Training Corps sponsored by the United States Public Health Service.

The nurses to be recruited for the Army are within the quota of nurses announced in May of this year, Mr. McNutt said. In planning the invasion of France, the Army found it necessary to speed up the recruitment, he said.

Mr. McNutt pointed out that it is possible to recruit the required number of nurses for the armed services without handicap to civilian services since there are approximately 170,000 nurses in active civilian service and 112,300 student nurses in training.

"If we are going to meet the needs of the Army and Navy it will be necessary for us to use the skills of nurses as effectively as possible," said Mr. McNutt. "The success of our nursing program depends in a large part on the cooperation of the nursing profession. In addition, we must have the cooperation of physicians, hospitals and patients to prevent waste of professional skills. It is important that we use these skills to the best advantage. We must see to it that our fighting men have the nursing attention every American family wants them to have.

"It is particularly important that nurses who are available for service with the armed forces volunteer for such service."

The WMC chairman said approximately 50,000 nurses are now serving with the Army and Navy. Almost 8,000 of these nurses were obtained through WMC's Procurement and Assignment Service in cooperation with the American Red Cross since January 1, 1944.

(over)

The nurses will be recruited at a time when they will have the advantage of being appointed with actual army rank instead of the relative rank which they have held prior to this time. An executive order signed by President Roosevelt on July 12 gives nurses in the army the full authority of their officer rank. Previously nurses could not claim dependency allowance and upon retirement received only benefits attached to their permanent rank rather than being permitted to retire in grade. In addition, their commissions were granted by the Surgeon General with the approval of the Secretary of War instead of by the President.

END OF ADVANCE RELEASE: For TUESDAY MORNING Papers, July 18, 1944.

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N-71

Schroeder - WMC 3406-7 PM-4642

WAR MANPOWER COMMISSION

For Immediate Release:
Monday, July 31, 1944

Cleared and Issued
Through Facilities of the
Office of War Information

Announcement by the War Department of 313,000 American battle casualties emphasizes the importance of the War Manpower Commission nurses' recruitment campaign, according to Paul V. McNutt, WMC chairman.

The WMC, through its Procurement and Assignment Service, in cooperation with the American Red Cross, is campaigning to recruit at least 8,500 nurses for the armed forces before Sept. 30, 1944.

"Our campaign," Mr. McNutt said, "ties in directly with the War Department announcement. The increased pace of the war on all fronts will mean an ever increasing load on the nursing facilities of the services. The wounded men being returned from the front must have the attention they need. A lack of nurses needed for our fighting men would be unthinkable."

Mr. McNutt said that WMC did not anticipate any particular difficulty in enrolling the nurses needed by the services. The response to date, he said, has been encouraging.

"The withdrawal of these nurses from civilian life, however," he continued, "could mean a definite shortage on the home front. It is important, therefore, that all nurses capable of serving in the crisis report for duty immediately. The civilian nurse who releases another for the Army, Navy, or Marine Corps is making her contribution toward victory no less than the nurse who puts on a military uniform."

###

X-32442

(RFN--phone conversation, May 1944
public relations -- War Dep't.)

ARMY

Army Service Forces -- Provides administrative and supply services for the Army

Army Air Forces -- Train and command military personnel and civilian personnel for everything connected with aircraft including procurement.
Army Ground Forces -- command and train troops.

The Army Service Forces has the following units under it:

1) Quartermaster Corps

2) Ordnance

3) Signal Corps

4) Engineers

5) Surgeon General

6) Transport

7) Chenical Warfare

Also under the Army Service Forces is the Judge Advocate General's office. All procurement for the 9 service commands throughout the couuntry, for supply, for running of the camps and all the statistical and legal and administrative personnel. The xxxxx purpose of the Army Service Force is to develop, design, manufacture, procure and repair and salvage all military supplies and equipment -- furnish all military personnel and civilians for the above purposes.

WAR DEPARTMENT
Bureau of Public Relations
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January 6, 1944

Wacs

IMMEDIATE RELEASE

62,859 IN WOMEN'S ARMY CORPS; 20,943 ENROLLED YEAR AGO

The strength of the Women's Army Corps stood at 62,859 officers and enlisted women January 1, 1944, it was announced today by the War Department. The figure represents a difference of more than 40,000 over January 1, 1943, when WAC personnel totaled 20,943.

"We are very much encouraged by current enlistment records," Colonel Oveta Culp Hobby, WAC Director, said. "We feel that we are on the road to a larger and more efficient Corps than ever before. The Army has asked for many more thousands of Wacs. I am confident that every qualified woman who is not doing an essential job and who is free to do so, will come forward. The Army can use every Wac it can get."

Colonel Hobby reported that during the All-States recruiting drive, which closed two weeks ago, American women enlisted at the rate of 903 per week. Thus, she said, the loss in WAC strength which had been anticipated in the transition from the WAAC to the WAC was regained during the last two and a half months of 1943. Despite the holidays, during which a sharp enlistment decrease had been expected, 762 women enlisted in the final ten days of the year.

While the authorized strength of the Corps is 200,000, it has set no quota for enlistments for 1944, Colonel Hobby said.

The Director disclosed that at the present time 3,002 Wacs are serving overseas. They are disposed in the various theaters of operation as follows: North Africa, 1,789; England, 1,143; and smaller numbers in the Southeast Asia Command at New Delhi, India; at Cairo, Egypt, and in New Caledona.

Wacs, Colonel Hobby said, are now performing 239 different Army jobs at more than 200 Army posts, camps, stations and air bases in continental United States and overseas. These assignments are in eight major classifications, according to a recent factual survey made in the Army Air Forces, the Army

MORE

vice Forces and the Army Ground Forces.

In paying tribute to the thousands of Wacs backing the attack here and overseas, Colonel Hobby cited the work they are doing behind the lines in the Italian campaign.

"The first United States color to fly in North Africa was placed there by our invasion forces on November 8, 1942," she recalled. "Six weeks later, on December 21, 1942, five WAC officers arrived, the vanguard of the first complete company to be sent overseas, which followed just one month later.

"When our forces moved into Italy," she added," a mobile detachment of WAC communications specialists followed shortly. Recently, an entire WAC company was flown in Army transports from its point of debarkation on the Mediterranean to the Allied Forces Headquarters in Algiers, so urgent was the need for Wacs.

"Two battalions of Wacs are working in England on maintenance and operations of the Eighth Air Force, which is now making devastating raids on Germany," Colonel Hobby reported. "A detachment of Wacs, mostly clerical, was dispatched to India shortly after the organization there of the headquarters of the Southeast Asia Command."

The WAC Director's summary added that steady progress in the utilization of Wacs in the Army--which at first called for their assignment to 37 jobs in four major classifications--is credited "to no little extent in relieving the manpower problem of the Army." In computing its manpower requirements, she said, a Wac is counted by the Army as a man. Of the more than 600 Army specialist jobs filled by enlisted men, 406 are non-combatant. Many of these can be filled by Wacs.

Colonel Hobby also reported that recruiting of Wacs for specific station assignments within the geographic limits of each service command, had been authorized by the War Department for the period from December 29, 1943, to April 12, 1944, which may be extended later.

This plan means that a recruit may select the post or airfield of her first assignment and be recommended, because of previous experience, for a specific type of job. This now applies to the Army Ground Forces and Army Service Forces, as well as to the Army Air Forces.

END

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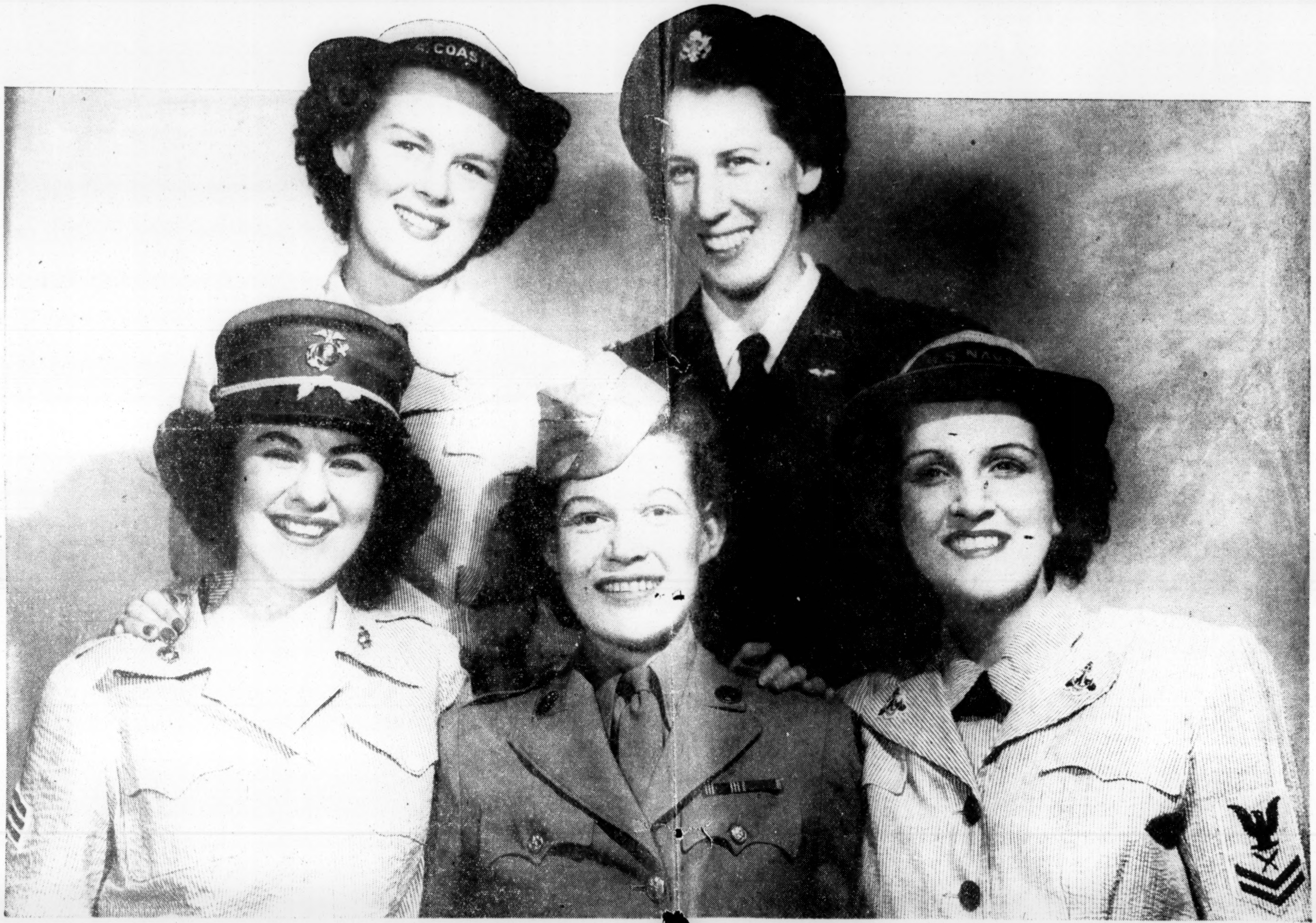

(Top, left to right) Seaman First Class Eileen Van Dree, SPAR; Miss Ruth E. Fitz Simons, WASP; (bottom row, left to [illegible]ergeant Alice Philpotts, Marine; Techinal Sergeant Mae Barry, WAC; Yoeman Second Class Lee Nichols, WAVE

A SALUTE TO AMERICA'S
Women of The Armed Forces!

Since the beginning of time, warfare has traditionally been a man's job . . . but in this great global struggle, the women of America are writing one of the most valorous pages in history! They have not only given their husbands, sons, and sweethearts, but . . . by the hundreds of thousands . . . they have donned the uniform, and have given themselves, to bring about the longed-for day of Victory. The WACS and the WASPS, backing up our Army and Air Corps . . . the WAVES and the SPARS, releasing sailors to staff our constantly-growing Fleet . . . the MARINES,

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A full-scale blue-print of all strategic points (invasion, occupation and liberation) of Europe has been prepared for The Hecht Co.'s War Bond Windows, at F-Street and Seventh. All points of military importance are keyed and controlled by electric lighting, and will follow the progress of our invading forces, with last minute news over the Teletype of Trans-

A SALUTE T

Women of The

Since the beginning of time, warfare has traditionally been a man's job . . . but in this great global struggle, the women of America are writing one of the most valorous pages in history! They have not only given their husbands, sons, and sweethearts, but . . . by the hundreds of thousands . . . they have donned the uniform, and have given themselves, to bring about the longed-for day of Victory. The WACS and the WASPS, backing up our Army and Air Corps . . . the WAVES and the SPARS, releasing sailors to staff our constantly-growing Fleet . . . the MARINES, who are supporting to their utmost those fighting Leathernecks, helping them on to Victory! Americans everywhere proudly salute these women, who have relinquished their cherished peacetime roles to share the work as well as the hazards of our valiant men in the service!

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TO AMERICA'S

Armed Forces!

See the Monster "Map of Liberation" . . .

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Shipbuilding

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150,000 Nov 1944
Women wage earners

= 12%

No. of W in [illegible] ~~72~~ 22
armed forces

Jan ~~18~~, 1944

Marines	14,864
Waves	47600
Spars	6658
Wasps	1000
Wacs	64 000
nurses	
Navy	710
Army	36000

Decorations awarded Wac's
(From Mary Agnes Brown by phone, 10/23/45. EB)

Bronze Star	174
Purple Heart	14
Legion of Merit	14
Soldier's Medal	6
Distinguished Service Medal	2
Air Medal	2
Navy Letter of Commendation	2
French Legion of Honor	2
French Croix de Guerre	1
	216

(These details add to 217, however.)

MISS MARY V ROBINSON
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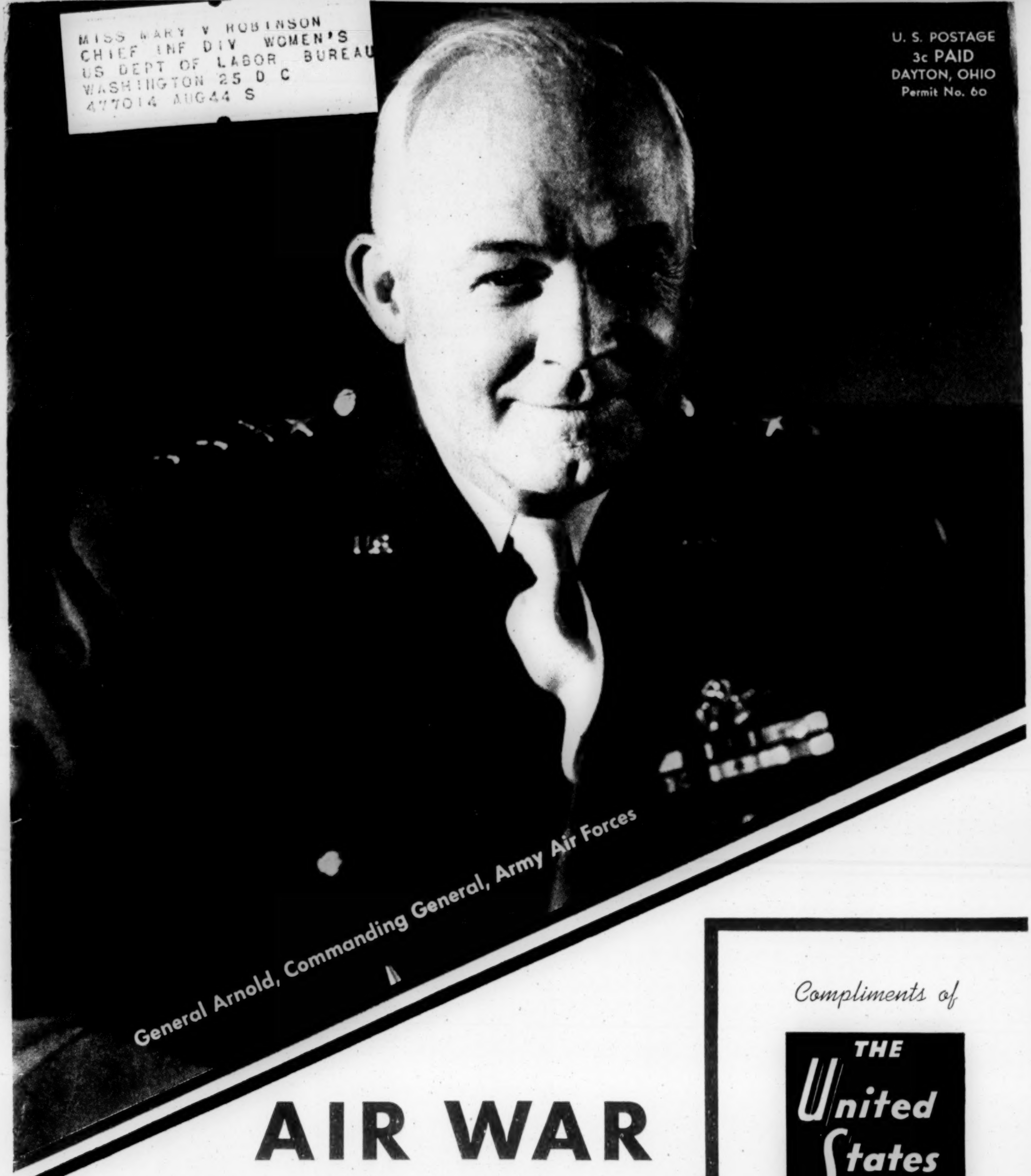


General Arnold, Commanding General, Army Air Forces

AIR WAR

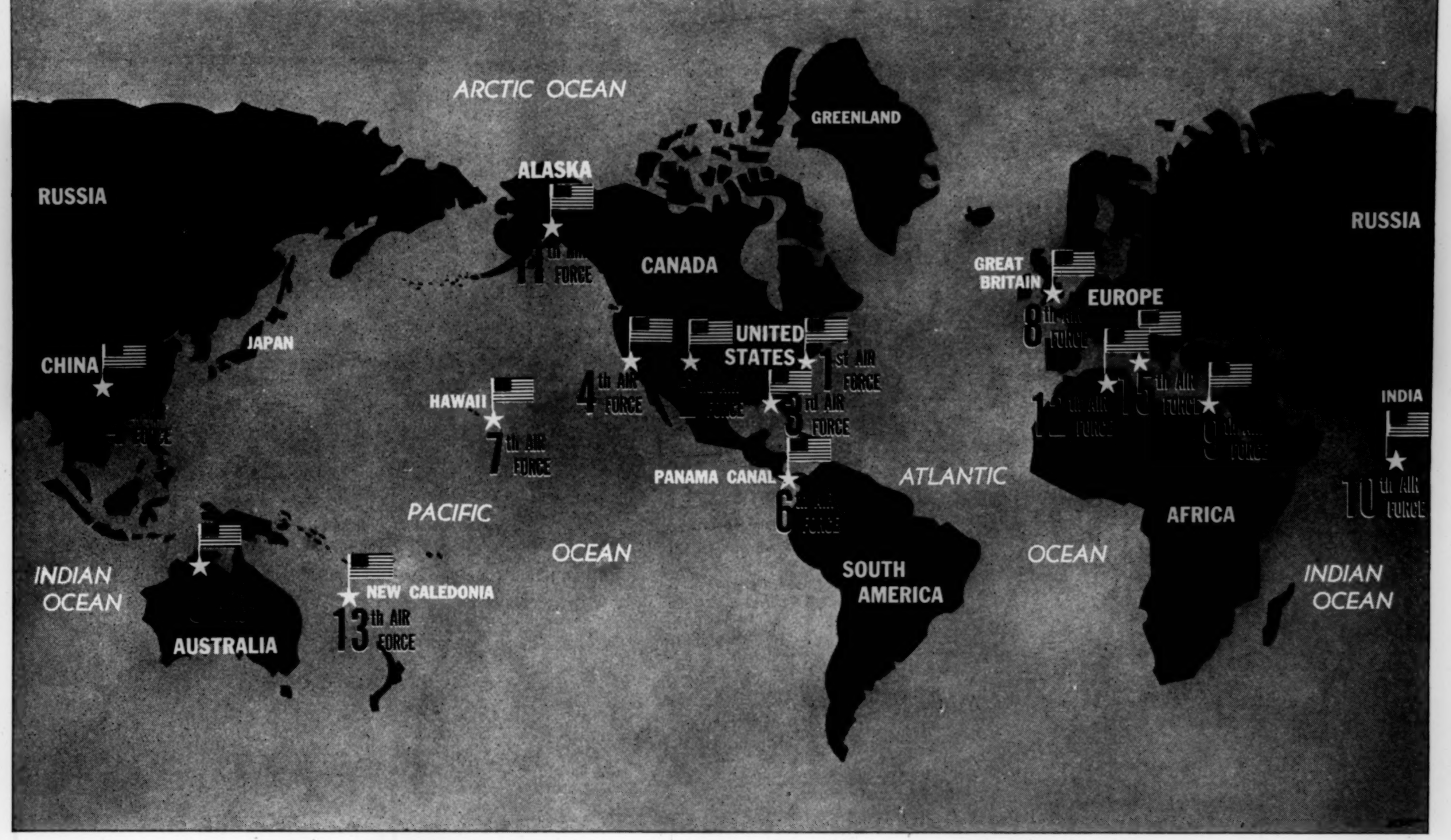
Official Report

Of the Commanding General Of the Army Air Forces To the Secretary of War

Compliments of

THE United States NEWS

The U.S. Army Air Forces' 15 Strategic Locations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3rd AIR FORCE
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8th AIR FORCE
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AUSTRALIA

AIR WAR

Official Report of the Commanding General
Of the Army Air Forces
To the Secretary of War

JANUARY 4, 1944

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Report of the Commanding General

OF THE

ARMY AIR FORCES

to the Secretary of War

SECTION ONE: BEFORE PEARL HARBOR

Introduction

Two years after Pearl Harbor we have reached the moment when the basic change in our strategic position has become apparent to all. It is now plain that for us the beginning has ended; for our enemies, the end has begun.

After a period of desperate, if resourceful, maneuvering with consistently outnumbered forces, the United Nations have mounted and are about to mount greater crushing aerial offensives on every front. The Army Air Forces are now in the process of fulfilling an historic and decisive mission.

No man, no group of men and no combination of groups could possibly have created the Army Air Forces. We have become a reality through the outpouring of the will and energy of an entire nation. In the most direct and personal sense, the building of what is now the world's largest air force involved one hundred and thirty million people.

Our enterprise reached into the lives of every American. Industries were mobilized, plants were constructed or converted with dazzling speed, millions of our citizens pulled up stakes and pitched into the work at hand with the spirit, resourcefulness and enthusiasm of our country's pioneers. The high school graduate put his diploma in a bureau drawer and enlisted as an aviation cadet. The housewife became a welder, three thousand miles from home. The farmer and his family walked to church on Sunday, to save half a gallon of gas for use over embattled Henderson Field. The skill, devotion, and hope of our people were focused on the Army Air Forces.

At regular intervals the Army Air Forces have reported to the nation, for a democratic people has the right to know. Now, the time is appropriate for a more detailed account of our operations and an analysis of our plans. It is also possible to release information previously withheld for reasons of military security.

Blueprints for Air Power

The resourcefulness and energy of our people would have been of little avail against our enemies if the Army Air Forces had not begun preparations for war long before Pearl Harbor. By Dec. 7, 1941, we were in low gear, and were shifting into second. That we were rapidly building up our strength at that time has been erased from the minds of many people by succeeding events. But due in large part to the initiative of our Commander in Chief, we did not start this war from scratch.

When the conflict was thrust upon us, we were already exploiting our national war resources and we were exploiting them despite handicaps and obstacles.

In the nineteen-thirties, when air power was the unseen guest at those grim conferences which marked the Nazi march to power, the Army Air Corps, which preceded the Army Air Forces, had drawn its blueprints for war. Those blueprints go back to 1935 when the General Headquarters Air Force was established. Previously, the Army's air power had been under the piecemeal direction of Corps Commanders. A ten-year program was begun in 1935, although the Army Air Forces received but a small fraction of the promised funds.

Today, when American bombers fly a successful mission in any theater of war, their achievement goes back to the blueprints of the General Headquarters Air Force. Our operations were based on the needs and problems of our own hemisphere, with its vast seas, huge land areas, great distances, and varying terrains and climates. If we could fly here, we could fly anywhere, and such has proved to be the case.

We operated under these principles:

(1) The No. 1 job of an air force is bombardment. We must have long-range bombers which can hit the enemy before he hits us; in short, the best defense is attack. The value of long-range bombardment has since been shown in the battles of Midway and the Bismarck Sea, in the campaigns of North Africa and New Guinea, in the campaign from the air against key facilities in the heart of Germany.

(2) Our planes must be able to function under all climatic conditions, from the North to South Pole.

(3) We believed in daylight operations.

(4) We operated with a precision bombsight.

(5) We developed highly trained crews, accustomed to working as a team.

(6) We believed in the strategic precision bombing of key targets deep in the enemy's territory, such as airplane factories, aluminum plants, and submarine building bases—as illustrated today by 8th Air Force operations from England over Germany.

(7) We practiced tactical operations in co-operation with ground troops. We used fighters, dive bombers, and light bombers for attacking enemy airfields, communication centers, motor convoys, and troops by means of hedge-hopping aircraft. Such operations have paid dividends in North Africa.

(8) We planned combined operations with the Army Ground Forces and the Navy, such as have taken place in the Aleutians, in Italy, and in the Southwest Pacific.

(9) Our research program put special emphasis on high-altitude flight, and we refused to become discouraged when on Oct. 30, 1935, the first experimental Flying Fortress, the XB-17, crashed and burned on its test flight at Wright Field. We ordered 13 more at once.

(10) The General Headquarters Air Force was also responsible for our present ideas of organization, maintenance and supply. It was obvious long before 1935 that mere *numbers* of planes were not enough. A powerful air force was the combined result of airmen, air bases, air supply, and airplanes. For example, over 150,000 different items of maintenance and supply must be kept on hand at air bases for a modern air force to operate. And perhaps most important of all is an industrial production system to replace planes lost in combat.

The working life of any airplane is short. I can now reveal that in one of our theaters, the typical Flying Fortress is at present in operation 231 days before it is lost in combat or damaged mechanically in routine flights so that it is torn down and used to rebuild other B-17s, and the crew assigned to another plane. During this average life period, in addition to the numerous practice, training, test, supply, administration and ferry flights, the average B-17 will fly 21 combat missions in this particular theater. This is true today—but may not be true tomorrow, for war changes constantly. In some other theaters, the typical B-17 functions several times as long as this before it is replaced.

Assets and Liabilities

From 1935 to 1938 the Army Air Forces, despite extremely limited budgets, developed detailed plans for a fighting air arm. The nation would have no part of any kind of war, but as military men we could only watch the German Luftwaffe's growth and redouble our efforts. We could get ready, even if we were not permitted to buy more than a few planes each year.

Before we entered the war we had resources that we could count on:

(1) We had the best aircrew material in the world. Our youth were accustomed to teamwork, competition, and mechanical processes. The mechanical knowledge and experience gained from rebuilding a $10 used car has doubtless saved the life of many an American by enabling him to "nurse" a damaged plane home.

(2) Our commercial air lines were flying more miles than all the rest of the world's air lines put together. The standard commercial transport, the DC-3, was to become one of the Army's best military transports, as the C-47 Skytrain. The air lines had trained men whom we could call on to increase our experience level. We also had in 1939 some 30,000 civilian pilots, who could fly or train others.

(3) The aviation industry was spending substantial sums on research projects, although it could not match the millions being poured into Nazi-subsidized laboratories.

(4) At the time of Pearl Harbor, our principal airplanes were flying successfully. The production of B-17 Flying Fortress bombers had begun in 1938. The B-24 Liberator was designed in 1938, and mass production begun early in 1941. The Liberator was the result of the Army Air Forces' desire for a long-range running mate for the Flying Fortress. In football language, we sought a good ball-carrier who was just as good at long end runs as he was at off-tackle smashes. We thought of the B-24 in terms of patrol and transport as well as bombardment, and it has performed all three functions splendidly. The B-25 Mitchell medium bomber was designed in 1938, and mass production was begun in February 1941. The B-26 Marauder medium bomber was designed in 1939 and production started in February, 1941. Design of the P-38 Lockheed Lightning fighter began in May, 1936; the first flight was in February, 1939; and the first planes came from the production lines in January, 1941. P-39 Airacobra and P-40 Warhawk fighter production began in 1940. P-47 Thunderbolt fighter production began in November, 1941. The P-51 Mustang fighter was in production for the British at the time of Pearl Harbor.

(5) Great as our industrial production was, we were faced with the staggering job of conversion. Industries with no aviation manufacturing experience whatever had to convert their plants. Of the greatest aid in this pro-

gram was Lieut. Gen. William Knudsen, then civilian head of the Office of Production Management. Aviation companies sent their own trained people to teach personnel in other industries, and they received new ideas in return.

Only in America would a piano company believe that it could convert to building airplane wings in a few months, and do it. A tire manufacturer built fuselages and tail surfaces. A former pickle plant turned out airplane skis and floats, and a manufacturer of girdles and corsets began making parachutes.

(6) Since the last World War the Air Corps had followed two policies in relation to the aviation industry. Airplane research and development is time-consuming, heartbreaking and costly. To design and build just one 8-foot wheel on the experimental B-19 heavy bomber cost $40,000. It can now be stated that a total of $852,000 was spent in developing the P-38 fighter, or $113 per pound. Some experimental planes are never mass-produced, although we learn valuable things from them, and the foregoing figures do not reflect at all the tremendous human effort involved in designing and producing a new plane.

The Air Corps always endeavored to nourish the aviation industry with experimental and sustaining orders. Although at our air bases for many years we were often grounded for lack of gasoline due to lean appropriations, experimental work went on.

The Air Corps also followed the policy, in contrast to foreign nations, of having two or more companies endeavor to develop the same general type of plane. We believed in competition and individual enterprise. As a result, designers came up with somewhat similar planes of different qualities, such as the B-17 and B-24, and the B-25 and B-26, and our many types of fighters. Each plane has its strong points. It is submitted that this policy has shown its value in combat, through a more versatile air force, and that it must be continued.

In the prewar period, the Army Air Forces had liabilities, too.

These were the lack of funds, the people's aversion to all forms of war which forced us into makeshift methods. The Army Air Forces had to teach the nation that large numbers of planes did not in themselves constitute air power; we had to show the folly of "the numbers racket." We designed different planes to do different jobs, and shouted from the hangar tops that no one "super-plane" could do everything. The Army Air Forces had to educate some of its own officers, accustomed to struggling along for years on bread-and-water budgets, to the fact that unprecedented expansion was not only possible, but that there was no other choice.

Antiquated air doctrines were still common. Many citizens still thought in terms of the last war—of heroic pilots in dogfights over France—even though the bloody proving grounds of China, Ethiopia, Spain, and Britain showed otherwise. They did not realize that the plane had broken down all boundaries of time and distance; that even our inland cities were within bombing range of the enemy.

Prewar Expansion: Growing Pains

As of Jan. 1, 1944, it can be revealed that the Army Air Forces number 2,385,000 officers and men, as was planned two years ago. Yet only a few years ago, the Commanding General knew literally every man in the Air Corps. And at one time in the earliest days, the present Commanding General constituted exactly one-third of all Army flying personnel. We were then a section of the Signal Corps.

The expansion of our personnel began in 1938 when the Army Air Forces had about 1,300 officers and 18,000 men, with a reserve of 2,800 officers and 400 men. In 1938 we were building 100 military planes a month. We had 1,600 planes. We then ranked about seventh among the nations of the world in military aircraft, but not in plans and ideas.

In November, 1938, the Chief of the Air Corps called aviation manufacturers together. He asked them to plan for unprecedented expansion. He could guarantee them no funds, offer them no contracts. He asked them to prepare to double and triple their plants, to become assembly plants, with subassemblies to be produced by the automotive and other industries—whoever could do the job. The aviation industry began making heavy outlays for expansion.

Without aggressive action, the Army Air Force would have been unable to put its expansion plans into being.

On Jan. 12, 1939, the President asked Congress for a $300,000,000 Air Corps appropriation. This money would provide for personnel in greater numbers, and increase our plane production to 5,500 a year. It would strengthen air bases and build new ones in Panama, Alaska, Puerto Rico and Hawaii. It would provide primary flight training for 20,000 men. It would furnish "educational" orders for industry, so it could prepare for mass production.

To provide airmen to fly the planes then being built it was necessary to expand Army Air Force training facilities at once. The Army Air Forces did not have sufficient instructors to train 2,400 pilots a year. To build another Randolph Field to handle 500 pilots a year would take five years. The idea was criticized as being against precedent, but heads of our civilian flying schools were called in by the Army Air Force. They were to get ready to teach huge classes in primary flight. The Army Air Force could offer them no contracts at the time to justify complete change-overs of their programs, but the flying schools immediately prepared to help handle the pilots. The figure was raised to 12,000 pilots a year, and later to 30,000. We could not possibly have trained so many airmen so quickly without these schools. Today, our pilot training rate has left these earlier goals far behind.

American production of military and commercial transport planes in 1939 totaled 2,400 planes. Hitler had used over 3,000 planes in one campaign—the conquest of Poland. However, quantity orders from the Army Air Forces began coming through in 1940. The appropriations of 1939 also provided money for research. For instance, in February, 1940, we could announce the long-sought cold-weather testing laboratory at Fairbanks, Alaska. This station was built because we saw the need of flying across the North Atlantic, in the Arctic, and across the Pole.

What We Learned in Europe

After war broke out in September, 1939, the Army Air Forces took advantage of the bloody lessons being learned in the skies over Europe. We had observers abroad at various times, including the Commanding General, General Spaatz, and General Kenney. Although foreign nations were buying planes in this country, they were reluctant to release any combat data. This kept us from producing combat planes with the latest features. We were not building the world's best or latest combat planes. Something had to be done and done quickly or our factories would have been committed to the production of thousands of planes that may or may not have been able to meet those of the Japanese or Germans on even terms. An understanding was reached whereby the foreign purchasers could buy from our American factories providing (1) they furnished us with the latest information on combat improvements, and (2) our planes then in production were modified by our aviation industry to be up to date, without additional cost to the United States. We would not release planes unless our own were as good as or better than the latest used in the aerial war over Europe.

It was clear that modern combat put a premium on heavier guns, leakproof gas tanks, greater fighter range, protective armor, and tail guns for bombers. When tail guns were put on the B-17, a large number of Jap pilots were shot down before they caught on to the fact. They just kept coming in to attack from the rear and were promptly blown apart, until one smart Jap waiting to come in watched his friends go down, and then flew home with the news.

The Army Air Force put its faith in the American .50-caliber machine gun. The gun was based on the .30-caliber Browning, but the larger caliber was an idea army ordnance developed, starting with a German .50-caliber anti-tank rifle of the last war. Our men have killed thousands of Nazis and Japs with this .50-caliber gun.

By May of 1940, about 2,000 planes had been sent to France and Britain, planes that we ourselves were to need so badly later. By early 1940 the aviation industry had doubled its workers. The dozen industries which made aircraft had increased by subcontracting to several thousand.

In April of 1941, the General Headquarters Air Force became the 1st, 2nd, 3rd and 4th Air Forces, which not only defended the North American continent but also became the training grounds for our overseas air forces. About this time we also began our first work on military air routes across the Pacific, but the routes across the North and South Atlantic, and the aid given to their establishment by civilian air lines and contractors did not come until some time later. When the National Guard was called up in August of 1940, the Air Forces gained many officers and men with valuable flying experience so badly needed in our expansion. When the Navy's destroyers were exchanged in September, 1940, for bases in the Caribbean, we gained immeasurably by having advanced airdromes for overwater operations.

When Germany attacked Norway in April, 1940, it was another victory for air power. When prevented from moving thousands of troops in ships, the Germans moved them by air. The Germans would have been in a difficult situation had Norway destroyed its airports. The control of airports was shown to be of paramount importance. We learned many things from those operations—ideas and practices that were invaluable to us later. Today, for instance, in the Southern Pacific, we are forcing the Japs out of one locality after another by seizing airports which are then used by our planes to cut off Jap supply lines, and thus make their bases untenable.

After Dunkerque, Great Britain needed planes to stave off the threatened invasion. The Army Air Force sent its own desperately needed aircraft to the Royal Air Force. During the fiscal year 1940, the Army Air Force actually received only 886 airplanes of all types from the manufacturers. However, as Hitler's conquests continued, the Army Air Force production goal was jumped to 10,000 airplanes. With the fall of France in May-June, 1940, the goal was set by our Commander in Chief at 50,000 planes a year.

It was a stupendous number, but everyone was determined to meet this challenge.

In plane production, the only limit in the future was to be the limit of American labor and engineering skill. To build our vastly more complicated planes, the airplane and engine manufacturers, automobile builders, and makers of subassemblies and parts had to train their own workers and thousands of new ones who had had no previous mechanical experience. In addition to doubling and tripling their floor space for added production and buying machine tools anywhere they could, they had to start schools, cafeterias, lunch rooms—and even provide homes—whole towns of them—for the new workers to live in.

Our First Heavy Bombers

The "numbers racket" was not entirely dead, as many people thought that planes—in large numbers—any kind of them—would win the war. Few people realized the need for heavy bombers in quantity. The Army Air Force was again forced into makeshift methods. By agreeing early in 1940 to a program which included a large number of light, trainer-type planes, the total number of planes on order was increased considerably and the Army Air Force plan for securing 200 heavy bombers was accepted. Thus the Army Air Force was to get its first heavy bombers in what were then fairly large numbers. If we had not had these big bombers after Pearl Harbor—the airplanes capable of flying the Pacific, and the Atlantic—we could not have kept our combat units supplied with planes and key equipment in the far-off corners of the world.

During this period of pre-Pearl Harbor preparation the Army Air Forces were especially indebted to Gen. George C. Marshall, Chief of Staff of the United States Army, for his profound grasp of air power and for his executive skill in working out an expanding air program despite obstacles.

By Jan. 15, 1941, the Army Air Forces had grown to 6,180 officers, 7,000 flying cadets, and 88,000 enlisted men. Meanwhile we were short of aircraft of all kinds, due in part to sending planes to our Allies.

Mr. Robert A. Lovett became Assistant Secretary of War for Air in April, 1941, after having served for several months as Special Assistant to the Secretary of War. Two major objectives to which he devoted himself from the start were the overtaking of Nazi plane production in the shortest possible time, and the streamlining of our organization. Both of these objectives were accomplished, enabling the Army Air Forces to become a striking arm which could carry the war to the enemy.

There has never been a time since war began in Europe that our air needs were not in a state of change from day to day. Combat developments caused changes to be made in accessories, armament, and armor, as well as aircraft and engines. These changes slowed production until the modifications could be made in the planes coming down the lines.

In England the great need in the earlier days of the war was for interceptors designed for maximum climb, maneuverability and speed. These were perfect for bringing down German bombers over England. But how different is air war in 1943 when we are sending our bombers by the hundreds over Germany. The requirements are now focused on the matter of longer fighting range, to protect our bombers from enemy interceptors over Germany. And those persons who think that, after the costly and time-consuming defeat of Germany, we can by a simple order fly our planes to China, bomb Tokyo, and bring Japan to her knees, do not yet understand the need for vast supply lines, well-equipped bases, and planes built to fight under entirely different conditions from those that prevail in Europe. No two theaters of war have been the same, and they probably never will be.

The Lend-Lease Act of March 11, 1941, put our aid to our Allies on a sound basis. When Germany attacked the Soviet Union on June 22, 1941, Hitler put on an aerial show from the Baltic to the Black Sea. He claimed the U.S.S.R. Air Force was "destroyed," but it was not. It had reserves, but it needed key equipment, which was rushed from Britain and the United States. Meanwhile, the fight put up by the Greeks delayed the Germans somewhat. Their march into the U.S.S.R. was late, and the worst winter in many years caught the Germans unprepared.

At the time we were also building up our aerial lines of communication and supply across the Atlantic and Pacific Oceans. In April, 1941, we established weather stations and airfields in Greenland, and we went into Iceland in July of that year. The Greenland bases were criticized on the curious ground that they might be attacked—probably be captured by the enemy—but we needed those bases and had to have them even if the losses in holding them were heavy. However, we had to have experts to lead those men—experts who could teach our young airmen the mysteries of the Arctic. We sought men with knowledge of northern conditions wherever we could find them. We found one civilian expert whose eyesight was so poor that without glasses he could not count his fingers, but he was a man we needed. We waived his visual handicap; he was commissioned, and has served us well.

The entire year 1941 was one of acceleration, in building bases and training facilities, teaching aircrews and groundcrews, establishing supply depots and supply lines, strengthening our continental defenses, expanding our aircraft, and engine factories, furnishing friendly nations with more planes and equipment than we could spare, and getting ready for war. When the Japanese attacked on Dec. 7, 1941, we may not have had a powerful air force but we knew that we soon would have one. We had the plans, and our organization was growing every hour. We knew that we had done everything in our power, everything permitted us by a peace-loving nation to prepare to defend that nation against cruel and cunning foes.

There was a great deal of German propaganda at this time about Hitler's "secret weapons." We had some ourselves, but the most valuable secret weapon that we had was the self-reliant, resourceful American soldier. The sixty billion dollars that were to be made available for the Army Air Forces could accomplish nothing without him.

SECTION TWO: BUILDING AN AIR FORCE

Germany required ten years to create her Luftwaffe; we were required to build our air force in one, and to fight with it in four corners of the world at the same time. By Dec. 7, 1941, our expansion program had been well started. The Army Air Forces then had a two-fold task: to build up a gigantic training system, and to hold off the enemy until we could build up strength to take the offensive.

Most people have forgotten the threats of continental invasion that existed after Pearl Harbor. With the Navy, we patrolled the North American continent. We kept our aerial supply lines open across the seas. When the Japs took Wake and Guam we adopted a football play—reverse the field and cross the Atlantic. Later we were able to switch to other island steppingstones which had been prepared. Thus we were able to send planes to the Far East across the Pacific and also by a route across Africa. We never let the Japs cut us off—if we had, they might have overrun the entire Pacific, and it would have taken many years to drive them out.

The task of the Army Air Forces was not only to build the world's most powerful striking force but also to deliver planes and their accessories to our Allies as well. From Australia, the Pacific, China, India, the Soviet Union, the Near East, England—came pleas for more men and more planes—but altogether we had less than enough fully trained combat officers for any *one* theater. It was necessary for us to parcel out our airplanes among the many who urgently needed them in much the same manner that water from the last canteen is distributed among a party lost in the desert. Furthermore, had the Army Air Force sent out all its planes from the United States, we could not have built the foundations for creating and training the additional combat units without which we could never have achieved air superiority in the various combat zones.

Accordingly, during a period of many months, calls to dispatch airmen and airplanes as stop-gaps to this or that area had to be refused in order to keep our training system intact. We had to steel ourselves against appeals not only from the various Air Forces fighting so valiantly against the enemy, but also against equally determined agencies in this country The question was asked at the time, "Why do you keep these planes in the United States, when they are needed so badly at the fighting fronts?" It is doubtful if these people fully realized what they asked. Had we acceded to their requests, we would never have been able to build up the Air Force we have today, or even the Air Force required to check—not defeat—the Japanese and Germans.

The Training System

The over-all program of the Army Air Forces was designed on the basis of a plan to give us overwhelming air superiority over our enemies in the shortest possible time.

There was no question as to whether the training program could be carried out; the Army Air Forces *had* to become the largest single educational organization in existence in a very short time. Facilities were secured, teachers were hired, and textbooks were written while the first classes were being held. At the start there was little training equipment, such as bombsights, navigators' sextants, or drift meters. Worst of all, actual planes were lacking. Instructors were somewhat in the position of a man teaching another to swim by showing him a glass of water, but we improvised until teaching materials were ready, working with mock-ups and synthetic aids.

Nearly five hundred hotels, plus garages, theaters, warehouses, exhibition halls, parking lots, athletic fields, and other structures were leased. There was no time to build such facilities; to do so would have strained the nation's man power, transportation system, and stock pile of materials. Leasing also prevented large outlays of money. The cost of permanent construction is over $1,000 per man, as compared with an annual over-all housing cost of $119 per man in leased facilities. Many of these structures are now being turned back to their owners.

Administrative officers were needed at once. An Officer Candidate School must function immediately. On Feb. 18, 1942, a conference was called at Army Air Force Headquarters in Washington, D. C. Qualified officers said it would take at least three months to set up the school. They were informed that three months were not available; Hitler would not wait. The conference was held on a Wednesday; the first classes were held in leased hotels in Miami Beach on the following Monday.

Experienced Army Air Forces officers were perilously few in number—we had to spread them through the growing organization. When the Allied nations began sending their cadets to the United States for training, additional duties were put on the shoulders of the experienced men. At one time foreign cadet training required a substantial part of our training equipment and personnel. About one-third of all our facilities were used for this purpose. In the United States were trained thousands of young men from Great Britain, the Netherlands East Indies, China, the Central and South American countries, and others.

Our entire training program had to be co-ordinated so that the air and ground crew members of the United States Army Air Forces would complete their individual training and form combat teams when the planes were ready. Our training system could be compared with assembly-line production. Individual training produced skilled specialists, such as the mechanic or bombardier, and the specialists were assembled along the line into fighting teams. Further along, they were assembled into still more complex combat teams; for instance, the reconnaissance units had to become thoroughly familiar with ground force operations; troop-carrier units had to practice with the ground units they carried into battle. At no place in this assembly line was progress easy, not even at the earliest stages. As a cadet who had just arrived at a basic flying school remarked, "The cockpit of a Basic Trainer looks like the Grand Canyon full of alarm clocks."

The Army Air Forces built new airfields, and trained men on them at the same time. It was not unusual to find a training field with dozens of planes flying above it, bulldozers on the ground finishing the earth-work, cement mixers turning out concrete for runways yet to be built, and men in the open still clearing the brush off what had been grazing land a few weeks before.

We have been told that German youth were taught mathematics, meteorology, communications, navigation, and physics in public school. In that they were smart, for we had to take valuable time for such ground school work. However, we arranged pre-flight instruction as soon as possible. The old cadet requirement of college credits was waived and a comprehensive test substituted which revealed a man's potentialities, rather than his academic background.

Technical Training

The majority of AAF personnel are specialists. We trained men to repair gun turrets and airplane propellers, to operate radio control towers, to take aerial photos, repair teletypewriter systems, and to perform a thousand other important tasks.

The men were taught that in the field they would have to make most repairs on the spot, and the results of this system have been satisfactory.

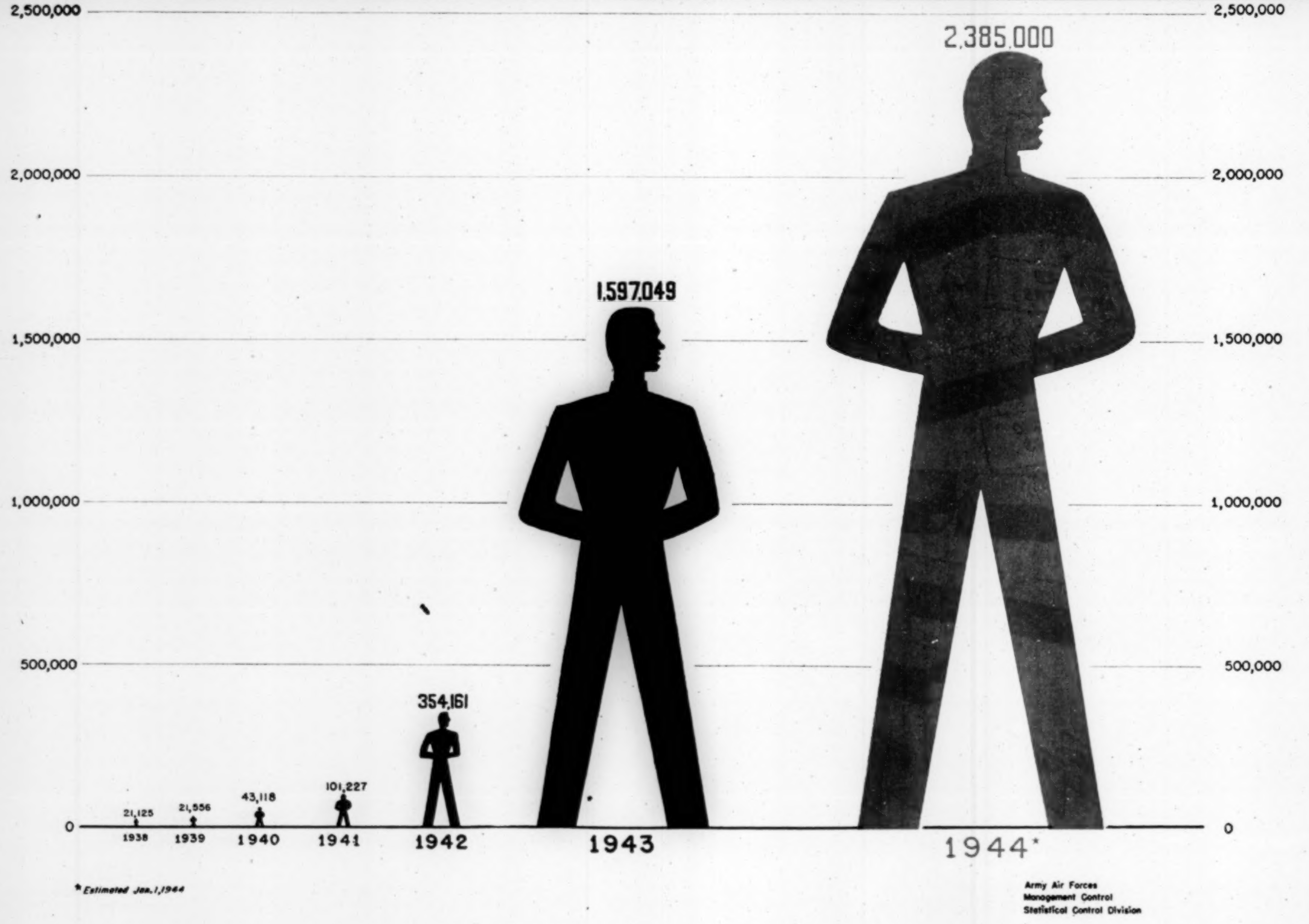
(1) Not long ago in the Mediterranean area, a tactical mission was scheduled from an advance airfield. Threatening weather made de-icing boots mandatory—but two or three of the boots on planes had been damaged by enemy bullets. With no other rubber available, the resourceful ground crews took some emergency life jackets apart, and used the rubber in them to repair the boots. The mission went out in poor weather, caught and destroyed 13 enemy aircraft on the ground.

(2) Recently the Commanding General of the Army Air Forces visited a Pacific air base built on a barren atoll. First, it had been necessary to build docks before supplies could be unloaded. The men then hammered out a smooth landing field on tough coral rubble, built barracks and other facilities. The mechanics improvised much of their equipment—a good engine hoist was made from the washed-up timbers of a wrecked ship. This well-equipped base was handling peak traffic in exactly one hundred days from the time the first Americans waded ashore.

Advanced Preparation

The Army Air Forces knew that aircrews and groundcrews could be trained faster than in peacetime, although it was insisted that our standards of proficiency must not be lowered. Accordingly our cadets have always received more actual flying hours than the airmen of any other nation. There is no *ersatz* for experience. Global operations put greater stress on formation flying, navigation, maintenance engineering, communications, and weather reporting. Schools were set up to teach these subjects, and in many cases we had to give the teachers a brush-up

TOTAL MILITARY PERSONNEL IN THE ARMY AIR FORCES

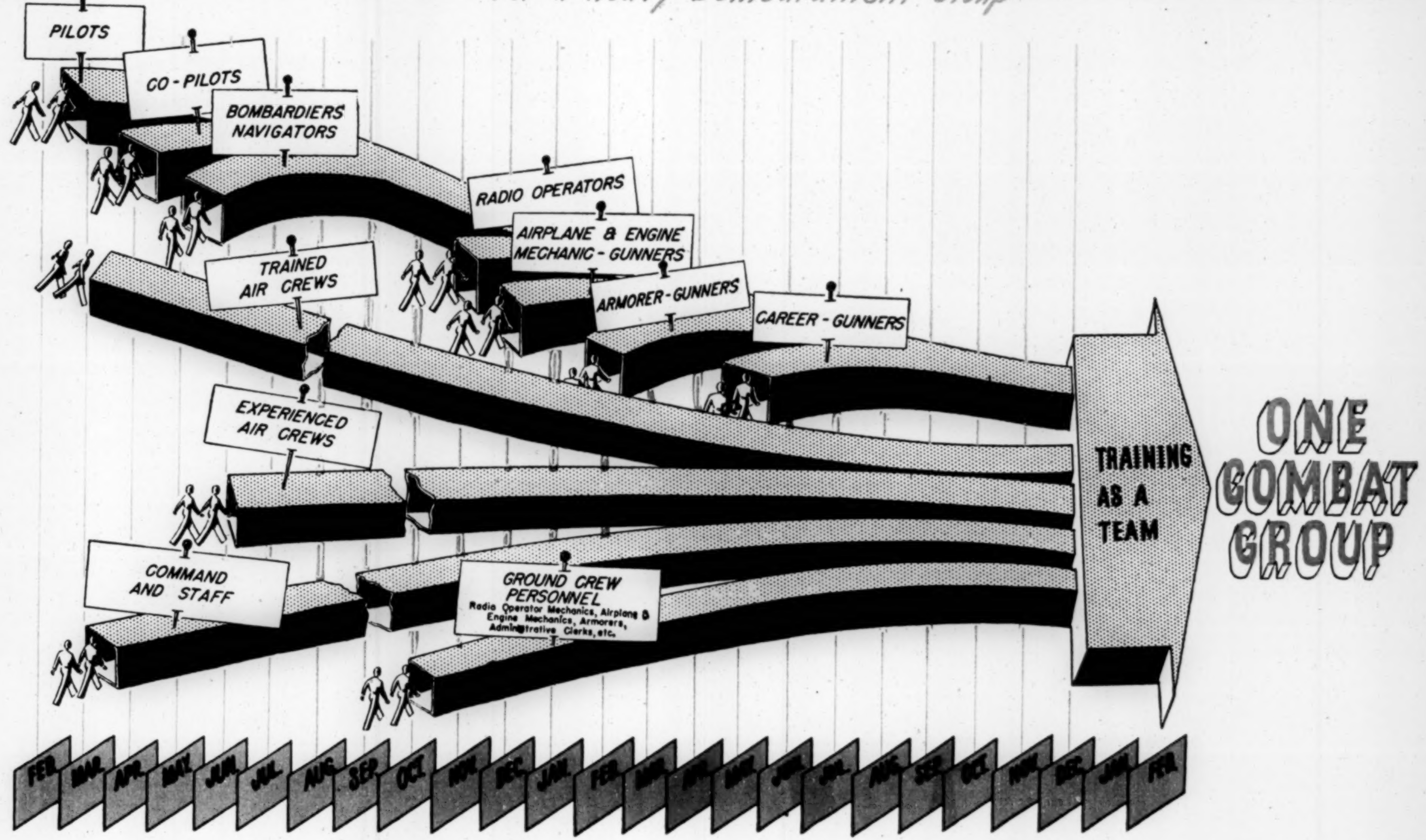


*Estimated Jan. 1, 1944

Army Air Forces
Management Control
Statistical Control Division

TRAINING PERIOD

For a Heavy Bombardment Group



Army Air Forces
Management Control
Statistical Control Division

before they could instruct the cadets. Special schools were established to train men for multi-engine aircraft, applied tactics, intelligence, troop carrier, anti-submarine, and other functions.

In Florida the Army Air Force has a Tactical Center. This organization constitutes one of the most important elements for the final training of our air and ground crews, and the testing of equipment which will be used overseas. The men live, work and fight as they will abroad, in organizational units as large as a complete task force. Fighter, bomber, and patrol missions are carried out from a dozen airdromes in an actual theater of operations about the size of Sicily. Instructors and advisers are experienced officers; many have just returned from combat. All branches of our air units receive such training: air and ground crews, communications men, service groups, weather men, medical units, antiaircraft units, paratroops and glider troops. The Tactical Center is the last dress rehearsal for air war.

The Tactical Center has other duties, such as working out new tactics, techniques and procedures to be used by Air Forces already in action abroad. The standardization of technique of operations and employment of planes is not possible in this global war, for 90 times out of 100 an idea that succeeds in Italy will not work in New Guinea. Hence we must be versatile—our tactics must be susceptible to change—our commanding officers must have ingenuity and imagination.

Today, the Army Air Forces are constantly working up new tactics. The refinements of skip-bombing in the Bismarck Sea Battle were worked out in Florida. So were the procedures and control techniques used in the Sicilian landings. Practically all equipment that originates at Wright Field receives its final exhaustive tests in Florida. This includes planes, parts, tools, and equipment of all kinds, from heated flying suits to parachute packs for Arctic wastes.

Training Policies and Results

The men in the Army Air Forces have been prepared in every way possible to raise their standard of efficiency, to reduce the hazards in combat, and to give them the upper hand over our enemy airmen before sending them into combat. After the airman has finished his individual training, he receives combat training both in the U. S. and in the theater of war before he goes on a mission. Even then, combat-wise officers watch out for the recruit airman as much as possible. In this business every man's life is in the hands of a team—a combat crew.

As the war continues, emphasis will naturally shift from the training of vast numbers of new men to the training of replacements and to increasing the technical knowledge of the men already in service. When that time comes the U. S. will have an Air Force with a striking power unequaled in history.

Our broad training program was facilitated by the cooperation of our citizens, our industries, and our schools. The Civilian Pilot Training Program of the Civil Aeronautics Administration constituted a valuable pool from which personnel could be drawn. With federal aid, vocational schools and public schools trained youths as mechanics and other technicians on a 24-hour-a-day basis. Government agencies lent assistance. The Coast and Geodetic Survey helped with maps and charts. The Forest Service provided information on noncritical materials. Well-known research men in industrial and university laboratories devoted themselves solely to aviation. Early in our program we realized that we must get square pegs for square holes and round ones for round holes regardless of where they came from—just because a man was a good pilot it did not mean that he was an expert in making parachutes or supervising the laying of a steel landing mat. These experts came from all walks of life.

As a result of tremendous effort, the Army Air Forces equipped and trained airmen to defeat the enemy who had been preparing feverishly for a decade—and shoot him down in aerial combat at a rate of never less than two planes for one in any theater of war, and at an overall rate of four to one.*

Flying Safety

Flying safety is vital both to our individual men and to our program; we need every soldier. Defeating the enemy depends on our ability to send skilled combat crews against him in increasing numbers.

Let us not gloss over the fact that combat flying is a grim and dangerous business. If our only interest was flying safety in the United States, we would have every man fly a primary trainer on sunny days, and we could cut the accident record to almost zero. If we stopped flying and put the airplanes in hangars we would have no accidents at all. But war is not fought that way. From the outset, the Army Air Forces have taught the men at home the maneuvers that they would execute in combat abroad. In these maneuvers a few are bound to be injured or killed, but the overwhelming proportion of the men are better prepared to defeat the enemy.

While still training in this country our pilots are taught formation flying. Formation flying demands a great deal of the men, and collisions in training will inevitably occur, but in combat a tight formation is often the airman's best protection.

There has been an increase in the *numbers* of airplane accidents, but not out of proportion to the tremendous increase in the *numbers of men now flying*. The number of men now in training in the air every day is well over 120,000, approximately equal to the population of Camden, New Jersey, or Savannah, Georgia. It is twenty-five times as many people as were in the air in this country five years ago. During the fiscal year 1943 the Army Air Forces flew over 3,352,000,000 miles, which is equal to 134,000 trips around the world. This figure is domestic flying only—it excludes overseas or combat flying which has also increased greatly.

Despite the tremendous expansion of Army Air Force flying, the rate of accidents per 1,000 hours flown did not increase as anticipated in the fiscal year ending June 30, 1943, but was, in fact, reduced fractionally from .739 to .716. This rate of accidents was lower than the average rate for the 10 peacetime years of 1931-1940, although more than three times more miles were flown last year than in the whole preceding 20-year period. As a result of the increased proportion of larger and heavier planes carrying more personnel, of faster military aircraft, and of newly trained pilots, the rate of fatal accidents was up fractionally from .077 in 1942 to .083 for the full fiscal year of 1943. The trend near the end of the year was downward and in the last quarter the rate was below that of 1942.

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*Enemy planes destroyed in aerial combat compared with U. S. planes destroyed in aerial combat, Feb. 2, 1942-Oct. 31, 1943.

This record has been achieved despite the pressure of wartime training, and the fact that, with our tremendous expansion, the experience level of our fliers was bound to be low. The Army Air Forces use every means to teach accident prevention, such as films, lectures, books, posters, and periodic tests. Safety officers test flying equipment under all conditions, study take-offs, landing, weather conditions, airport clearances, and the like—even matters of fliers' diets are studied and the information used where applicable. Every accident, however trivial, is investigated and the findings used to prevent future accidents.

Basically, the accident record is good. Ninety-five out of each one hundred Army Air Force pilots in training can be expected to fly through the next twelve months without a scratch.

Growth of the Air Transport Command

In May, 1941, plans were developed for expediting the movement of aircraft from the factories to the points at which the British would fly them overseas. When the Japs attacked Pearl Harbor we received pleas from all parts of the world for personnel, planes, engines, parts, and supplies. We strove to meet these requests. Ships of the sea were slow and subject to attack by submarine. The war would be lost if we used only such means of transportation. Airplanes are weapons of war that cannot be held on the ground; there, they are a liability rather than an asset. We must get them in the air and keep them there. That requires supplies and replacements in constant streams. Thus came into being the Air Corps Ferrying Command: at first across the Pacific—then the South Atlantic—then the North Atlantic and now to all corners of the world where we take aircraft, important personnel, mail, supplies of all kinds—to places they are needed most. Starting with only two officers and one clerk in a small room, today's Air Transport Command totals over 85,000 officers and men.

Mounting aircraft production soon created a difficult situation for this new unit. Ever-increasing numbers of aircraft were leaving the factories to be delivered to American and British combat units. This meant increased flying, the requirement going up steadily day by day. The first ferried plane was delivered to the British on June 7, 1941. By Dec. 7, 1941, approximately 1,200 had been flown to the British and our own Air Forces, and the first delivery had been made across the South Atlantic to Egypt. From that time to this the number of planes in the air and the volume of freight carried have steadily increased. On one recent day 680,000 pounds of materiel, munitions, and supplies were delivered by air to one theater of operations. This information will be of neither aid nor comfort to our enemies.

The Air Transport Command's shuttle service to Britain and the Middle East and its exploratory flights to various parts of the world paved the way for routes which were needed when the United States entered the war. Arrangements for the development of such important bases as Christmas Island, New Caledonia and bases in Greenland were completed. A string of weather stations was laid out in the far North and the beginnings of a communications network developed, without which our world-wide flying might not have been possible.

After Pearl Harbor, domestic ferrying increased and has continued to do so. To this was added the urgent need for delivery of all types of aircraft overseas and the air transportation of strategic cargoes, including mail and personnel.

In addition to ferrying planes and routing flights to deliver supplies, special flights and deliveries were carried out wherever needed. Two dramatic examples of this are the delivery, on short notice, of the Flying Fortresses which were the Army's striking power in the decisive Battle of Midway and the sending of a number of C-47 transports, loaded with bombs and ammunition, to the Aleutians at the time of the attack on Dutch Harbor. Both of these actions influenced greatly the course of the war.

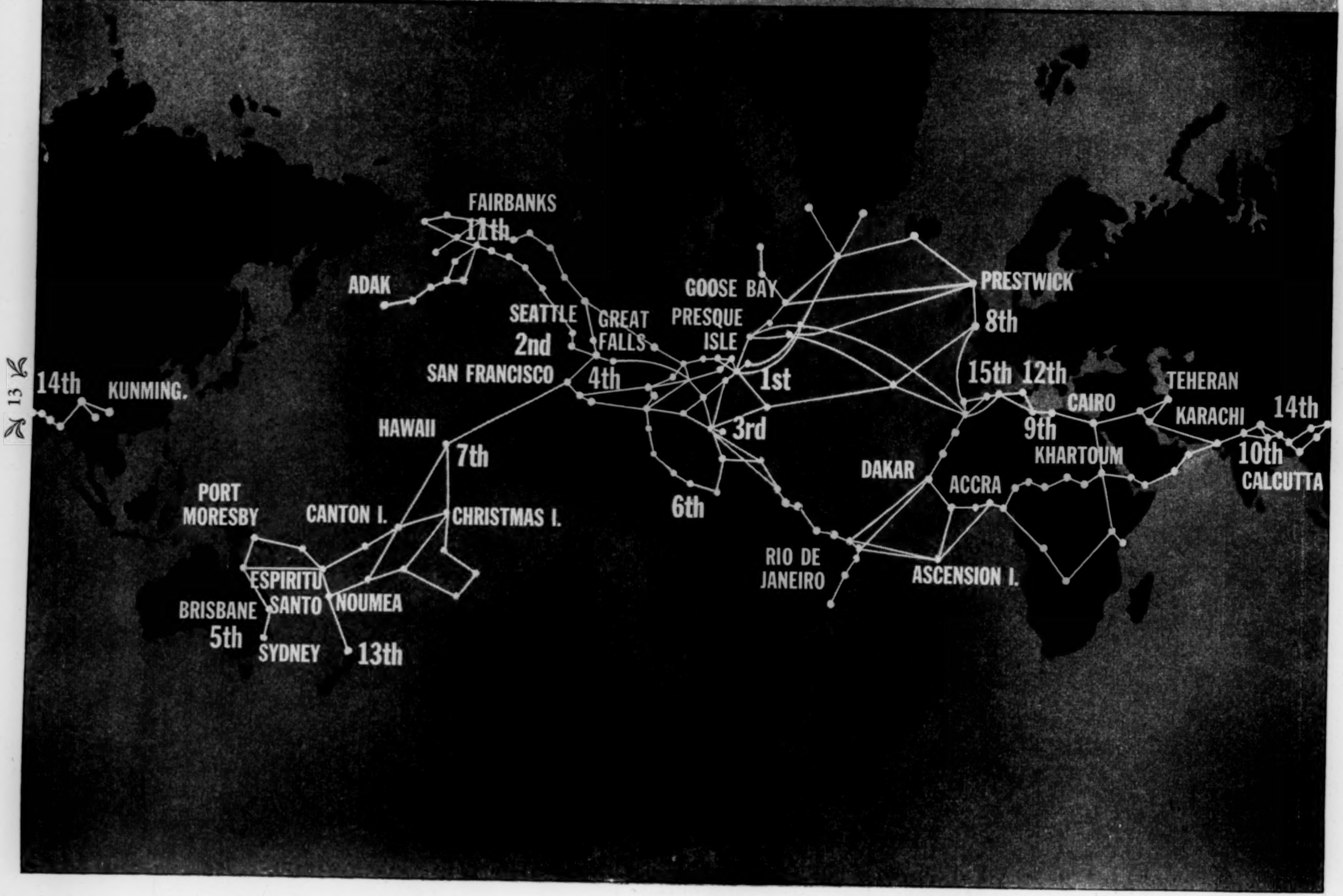
By July, 1942, it had been determined that military air transportation had grown up; the Ferrying Command was reorganized as the Air Transport Command, to perform all kinds of air ferrying and air transportation. Under its control the various air lines, on contract with the War Department and flying aircraft issued to them by the Army, render transport services for the armed forces and our Allies. This contract system is worthy of special mention. While taking care of our domestic air transportation requirements, we look out in so far as possible for the American public's air travel needs. Of course neither civilians—nor the fighting forces—obtain all the service they wish they could obtain. Four thousand additional transport planes could be used today if we had them.

The current offensive of the Eighth Air Force against Germany, the role of air power in our attack in Italy, and the air offensives of the U.S.S.R., to pick three examples, depend upon the steady movement of new combat planes both to augment the air forces and to replace those planes shot down, damaged, or laid up from ordinary wear and tear. This means a steady movement of planes in such numbers as even two years ago would have seemed the product of a fevered imagination.

To help meet the tremendous need for personnel, women pilots were first employed by the Ferrying Division of the Air Transport Command in September, 1942. At the same time a training program was begun to train women pilots for ferrying and other duties. Now known as the Women's Airforce Service Pilots or WASPs, they are doing an effective job of delivering aircraft in the United States, from the smallest planes to P-47 Thunderbolt fighters, B-17 Flying Fortress bombers and C-47 Skytrain transports. By Jan. 1, 1944, about one thousand women, including trainees, will be on duty. Not all qualified applicants can be accepted for training, since the Army Air Forces cannot train or utilize women pilots at the expense of training and experience needed for men pilots in the theaters of war

The WASP helps fill the need for professional noncombat service. For example, the Training Command uses many women pilots to ferry airplanes to and from certain bases for major repairs or overhaul. However, in recent months the WASP has assumed additional duties —towing targets in gunnery schools, acting as copilots

THE ARMY AIR FORCES - LOCATIONS AND AIR TRANSPORT COMMAND ROUTES


FAIRBANKS
11th
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15th
12th
TEHERAN
CAIRO
9th
KARACHI
14th
KHARTOUM
10th
CALCUTTA
DAKAR
ACCRA
ASCENSION I.
RIO DE JANEIRO
HAWAII
7th
CHRISTMAS I.
CANTON I.
PORT MORESBY
ESPIRITU SANTO
NOUMEA
BRISBANE
5th
SYDNEY
13th
14th
KUNMING.

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on night searchlight missions, and the like. Women pilots are also flying some of the weather planes which take meteorologists aloft. Indeed, this organization has come to serve a variety of useful purposes in the Army Air Force organization.

Since the Ferrying Command was established in May, 1941, the transport and ferry systems of the Air Transport Command now extend over some 110,000 miles of routes. In recent months an average of more than twelve million miles a month have been flown in ferrying operations and more than ten million in air transport.

A word of caution must be said about this impressive growth. Figures of miles flown and tons delivered by air are impressive. However, when the total supply requirements of an army in the field or of a sizeable air force are considered, they dwindle. A mission of 300 four-engine bombers drops more than a thousand tons of bombs. To this cargo must be added tons of gasoline, ammunition, and oil. After the mission, there are engines to be replaced, spare parts provided. Air bases must be kept supplied with machinery, tools and men. Flying and ground personnel must be fed, clothed, housed, doctored, and they must have mail—by the ton. It will be realized that air transportation itself does not solve the whole problem of supply, but the ability to fly in vital cargo on short notice can turn and has turned the tide of battle.

Women's Army Corps

Members of the Women's Army Corps are now serving 20,000 strong at airfields and air bases in the U. S. WACS are filling two hundred different jobs in the Army Air Forces, such as Link trainer operators, parachute riggers, cryptographers, camouflage technicians, weather observers, and flight control tower operators. One Air WAC, an expert watch repairer in civilian life, is now a bombsight repairer. Another, a dog fancier, has a key position in the dog training program of one of the domestic Air-Forces. The great majority of Air WACS are filling less unusual, but equally essential clerical, communications, and motor transport jobs. The Army Air Forces need over 100,000 additional WACS to serve on domestic airfields and thousands more overseas. The WACS serving our air stations are carrying on with the efficiency and effectiveness exhibited by the men whom they replaced. Thus we are saving man power.

The Air Service Command

The Air Service Command, formed in October, 1941, surpasses in size and is doing a wholesale round-the-globe business greater than any mercantile establishment in the world. It employs 300,000 civilians, of whom 43 per cent are women. Incidentally, many of these loyal workers were previously considered unemployable, but the Air Service Command has found suitable tasks for the handicapped, for the blind—and even midgets find their size an asset when working inside the fuselages and wing sections of certain planes. The Air Service Command's 300 warehouses contain 500,000 different items—five times as many as are listed in the Sears Roebuck Catalog. Every one of them is needed for the 150 aircraft types of the Army Air Forces. The storage space in the U. S. alone is equivalent to a building 75 feet wide and 100 miles long.

The Air Service Command prepares equipment and supplies—which are moved by ship to 210 foreign ports. It can now be stated that for every pilot overseas, the Air Service Command sends out the surprising average of *nine tons of aviation supplies monthly,* not including food and other items handled by the Quartermaster.

Because of the technical knowledge with which aircraft equipment must be handled, the Air Service Command retains control over maintenance of all equipment. In the course of one month, thousands of airplanes at home and abroad require major repairs which the crews of the combat units on the spot cannot make. These planes are repaired and overhauled by the Air Service Command Depots. Some inkling of the extent of ASC operations may be gathered by the fact that, within the United States alone, the Air Service Command supplies 4,000,000 barrels of aviation gasoline a month. One barrel would last the average motorist a long time.

The Air Service Command finds answers to a host of war emergencies every twenty-four hours. For instance:

1) Two boatloads of Air Forces supplies were on their way to China and Burma. Weeks had been spent assembling the cargoes, and the freighters crept through submarine-infested waters for two months. Within one day of their destination, both were torpedoed and sunk. ASC Headquarters, however, had a list of every item aboard. In eleven days a replacement supply had been brought together from all parts of the nation, loaded aboard other ships, and the journey began again. The theater commander received word that his lost supplies had been replaced before he learned his original shipment had been sunk.

2) On July 15, 1943, the engineering officer of the 12th Air Force was in Sicily to determine at which place on the island our battle-scarred airplanes could receive much-needed overhauling. Personnel, equipment, and spares were urgently needed for this great air offensive. The officer left Africa on July 16 and arrived at Patterson Field, Headquarters of the Air Service Command, July 19. Two days later the supplies had been accumulated. On July 22, the officer took off in a four-motored plane, which was loaded to capacity with trained men, and landed in Africa on July 23. Planes bringing everything else he needed followed within a few hours. He had been gone exactly one week.

3) The "Thick and Thin Lumber Company" was a sawmill set up in New Guinea. The sawmill was made from a crashed airplane, two wrecked trucks, a worn-out tractor, and machinery from an abandoned copper mine. Parts of the mill represented Japanese, German, Australian, British and American origin. The lumber produced was not always uniform, but it served its purpose well. Thousands of board feet were manufactured.

4) In the European and other theaters, Flying Fortresses whose tail sections were wrecked by gunfire were disassembled so that their forward sections could be used with ships which had suffered irreparable damage in the nose and frontal compartments. With thousands of delicate connections involved, this is a highly complex operation.

5) An American transport plane was damaged in a forced landing in the mountains of Western China. Ordinarily, heavy equipment with wreckers and power hoists would have gone along, but this was China. An Air Service Command salvage crew of only four men set out

with two trailers, one small truck, and hand tools. The crew hired Chinese to fill in ditches, cut down trees, help get the dismantled plane loaded on the trailers. The caravan then worked its way down rough mountain roads, and arrived at its base within a matter of days from the time the plane had gone down. Once at the base, the plane was made ready to fly in a matter of hours.

Aviation Medicine

One of the most important tasks of the Air Surgeon's office is setting the physical and psychological standards for the selection of young men for flight training, and the proper classification of the men as bombardiers, pilots and navigators. This is accomplished by utilizing batteries of tests from which a combined aptitude score is obtained.

Since our Air Forces fight all over the globe, their officers and men are subject to health hazards unknown at home. When an airplane goes from one theater to another it is carefully inspected so that it does not transport germs or disease-carrying insects. Not long ago at an air base in North Africa a young flight surgeon learned that several cases of typhus fever had broken out in the native village near the field. So he gave every native a thorough de-lousing, and not one American at the base came down with the fever.

Calculating the medical and dental supplies needed in all war theaters—for jungle, desert, mountain, and Arctic operations—is another task of the Air Surgeon. During the past fiscal year the Air Surgeon's office has co-ordinated the development and purchase of several hundred thousand aeronautic first aid kits, Navy-type first aid kits for life rafts, airplane ambulance chests, and frying pan kits which are placed in the seat of the flier's parachute. The frying pan kits contain benzedrine for the temporary relief of fatigue, halazone for chlorinating water, atabrine for malaria, boric acid ointment for burns, sulfadiazine to prevent infection, iodine swabs, salt tablets, bandages, needle and thread, soap for washing, and tea tablets for a warming cup.

Still another task of the Air Surgeon is directing the air evacuation of wounded men. Since Pearl Harbor, over 125,000 casualties (sick, wounded, and injured) have been flown from combat zones in American transport planes. This simple statement encompasses one of the greatest accomplishments of modern aviation medicine—an accomplishment of interest to every parent of a soldier in any branch of the Army.

The first obstacle that had to be surmounted in developing the air evacuation service was the supposed danger of killing the patient—estimated by some medical authorities to be a real one in the case of head, chest, spine, and internal injuries. Yet the safety of transporting wounded by air has been demonstrated beyond doubt. In the Mediterranean theater from the beginning of the Tunisian campaign in November, 1942, to the close of the Sicilian campaign in September, 1943, more than 25,000 men with all types of illnesses and wounds were transported 8,000,000 miles by air. Only one patient died—one in 25,000.

The second obstacle was the shortage of air transports. Airplanes, it was said, could not be spared solely for such purposes. This obstacle was surmounted by the simple conversion of cargo planes carrying troops and supplies to the front to the transportation of patients on the return trip to the rear. Air evacuation is a boon to the morale of ground troops, and aids the theater commander by quick removal from the battle zone of his non-effectives. Trips which would take weeks by hospital train or ship are now flown in a day. Air evacuation is an outstanding example of successful co-operation among Army Air, Ground, and Service Forces.

Much of the progress of the air medical program is due to the excellent care given the injured, sick and wounded men by our nearly 7,000 nurses. Included in this group are the Flight Nurses, who have received special training for their work at the School of Air Evacuation, Bowman Field, Kentucky. Today, long flights are commonplace. One soldier with a broken back was brought to Walter Reed Hospital in Washington, D. C., from Kunming, China, via India, and Miami, Florida—nearly 15,000 miles in 82 hours. Trips which would take weeks by a hospital ship or train with a staff of doctors and nurses are now flown by transport planes, staffed by a Flight Nurse and noncommissioned medical technician, in a day or two.

Flight nurses are carefully selected and trained in phases of aerial medicine, intravenous therapy, tropical medicine, field sanitation, compass, map and aerial photography orientation, what to do in case of air and gas attacks, and other matters. The lives of the men may depend upon her proficiency. Besides looking after the comfort and needs of the sick and wounded men, the nurse can also be helpful in maintaining high morale. Each patient requires individual attention. The nurses of the Army Air Forces have met the tests of battle in a manner to merit unqualified approval.

Complete hospital service now moves with the mobility of war itself. Six days after the Army hospital in Nome, Alaska, burned down, a new and complete 25-bed hospital had been flown in from a distance of 3,400 miles. Two field hospitals were flown over the Owen Stanley Mountains in New Guinea. In Sicily, a 50-bed hospital was moved by air a distance of 44 miles in 2½ hours from the time it was dismantled until the time it began receiving patients at the new site.

In designing P-47 Thunderbolt fighters, which maneuver at 400 miles an hour, and Flying Fortress bombers, which can climb to 40,000 feet altitude, aeronautical engineers have carried aircraft performance far beyond the natural tolerance limits of the human body. To make their planes humanly as well as technically, practicable, the engineers have formed a close partnership with the medical scientists.

The main oxygen engineering achievement of the last two years has been the production of the demand-type oxygen system, replacing the continuous-flow type still found in the older planes. The demand system automatically supplies the flier the amount of oxygen he needs at any altitude up to 40,000 feet. All flying personnel are given indoctrination in the use of oxygen by high-altitude training units equipped with low-pressure chambers. These units make simulated flights to 38,000 feet, and the necessity of rigid oxygen discipline at high altitudes is made clear to every airman.

Constant research is being done on flying fatigue. Rest camps have been established in theaters of operation, and in the U. S. In all of our active units, the flight surgeons keep a close eye on all personnel to discover those men who need a change or rest before the severe demands of combat flying result in serious psychological maladjustments.

The Convalescent Training Program, which was begun with our men in training, is now being extended to fliers overseas. It stems from a program carried out in the 239 Army Air Force hospitals in this country during the past year. The rehabilitation program includes physical exercises which may begin in bed and end with outdoor games, and educational pursuits of a vocation or military nature. About 2,500,000 man hours each month are devoted to such activities in the Army Air Forces.

With the intention of achieving equal results in the rehabilitation of the wounded, sick, and war-weary men, the Army Air Forces is establishing seven rehabilitation centers in the U. S. Every known facility is being used to aid these physically and psychologically wounded soldiers to make a new place for themselves in military or civilian life. Our interest and responsibility do not stop at the moment our men drop their bombs on the target.

Aviation Engineers

Modern war is a war for air bases; the bulldozer must accompany the plane. Aviation engineers operate normally under control of an Air Force, and have been termed an essential part of the air combat team. Airborne aviation engineer battalions, a new type unit initiated by the Air Engineer and unique in our Army, can be flown with their light equipment to locations inaccessible except by air, as has been demonstrated in the Southwest Pacific.

One of the elements of victory in North Africa was the speed with which our aviation engineers constructed airfields behind the front lines and pressed the attack. One airfield has actually been built in no man's land, far in front of other bases from which aircraft had to protect it. In North Africa captured airfields were put in usable condition in a day or two. In the Aleutians, engineers built airfields down the island chain, and when they had completed a base on Amchitka—just 69 miles from Kiska—the Japs began to realize that Kiska was no longer tenable.

There is a vast difference between the pounded earth runways that serve for fair-weather use in Africa and the long, wide concrete runways being built in England. Construction of runways in battle zones may require our men to cut down trees, dig ditches, dry a lagoon, change a river's course, level a hill, lay down steel mats, break up coral, or haul iron ore from a distant source. In China, runways are built by thousands of coolies, breaking up rock with hand tools, and carrying it for miles in baskets. Without mechanical equipment, it takes from two to three months in China to build an airfield.

When the United States forces first landed in North Africa, there were nine airdromes that our planes could use. Within a few months there were a hundred. Mud, and later dust, were the worst problems. With the Axis on the run, airfields were built even faster. One request was received to build several fields in the Sbeitla sector; seventy-two hours later all were in use. When an enemy airfield was captured, the first job was to remove mines. From one runway 1,800 mines and booby traps were removed in eight hours without a casualty.

The portable steel landing mat, used in all theaters, has been one of the outstanding developments of the war. After experimentation with other types, our Allied forces now use the pierced steel plank type of landing mat developed in America. Today's production is concentrated on this type mat. To date approximately 175,000,000 square feet of the pierced steel type mat has been sent to the combat theaters, and 300,000,000 square feet is on order for the calendar year 1944. Studies are under way for the use of magnesium or aluminum, to provide equally strong mats weighing half as much. Some conception of the logistics problems of modern war can be gained from the fact that some 60,000 pierced steel sheets 15 inches by 10 feet are required for a 150 by 5,000 feet runway, weighing nearly 2,000 tons, requiring 35,000 cubic feet of cargo space to be shipped overseas perhaps ten or twelve thousand miles. However, portable steel landing mats have proved to be worth many times their cost.

World-Wide Weather Service

Weather is a critical factor in this war. It provided cover for the escaping German battleships, the *Scharnhorst* and *Gneisenau*. It failed to protect the Japanese convoy that General Kenney's men sank in the Bismarck Sea. Success of these and many other operations has depended largely on the weather. The side making the best prognostications has a tremendous advantage.

The expansion of the Army Air Forces necessitated a corresponding increase in the weather service to fill the basic need for operational weather information. This has been done, and today the Army Air Forces Weather Service has units in every theater and along the air routes linking them to the United States. Personnel working on the Air Weather Services has increased 9,000 per cent. The task of the Army Air Forces Weather Service includes the supply of information to our Air, Ground and Service Forces, and close co-operation with other weather agencies serving the United States and our allies.

This world-wide service, manned by thoroughly trained personnel, still did not completely fill our needs. Special climatic studies, based on historical records, permitted the selection by comparison of the best and worst periods of the year for a particular military operation. After selection of the proper season, it was necessary to wait until within 24 to 48 hours of "D" day before actually determining the weather possibility of a successful mission. The gap existing between climatic studies and short-range weather predictions had to be filled. Our only answer was in long-range forecasting—a determination of future weather well in advance.

Insistence on a solution to the problem of making long-range forecasts at first met considerable opposition both inside and outside the Army Air Forces. Through the concerted efforts of many of the country's outstanding meteorologists, both within and without the armed forces, in co-ordination with our allies—and utilizing those details which we know of the German long-range forecasting, definite steps forward have been taken. This extensive research procedure has made possible long-range weather forecasts of 48 hours—10 days—and 30 days with sufficient accuracy to permit of making preparatory plans for future operations.

We now have a well-integrated weather service that supports our operations all over the world. Weather data has been complied, and is being augmented for the continental invasions of Europe.

Weather stations have been set up in countless isolated spots.

For instance, at the beginning of flight operations over the North Atlantic, it was apparent that a weather reporting station was needed on the uninhabited southern tip of Greenland. Forecasters knew that jagged rocky masses rose up to nine thousand feet from the ice-strewn sea to stuff clouds in the path of planes flying to Iceland. They knew that icing conditions often extended to high altitudes over the ice cap, to prevent planes from flying over the top. It was essential to know the exact height of the cloud ceiling and the weather conditions that prevailed below. Forecasters also needed information from this incubator of North Atlantic storms to predict weather conditions for trans-Atlantic flights and convoys.

Reconnaissance flights disclosed that the only possible site was a narrow ledge in an ice-jammed fjord only four hundred feet wide, at Prince Christian Sound. Four Army Air Forces weather men and four Army Airways Communication System men were chosen for the station. The men at this station are isolated, except for radio contact, for ten months of the year. They live in sturdy buildings, cabled to the rocks, to withstand the high winds which have been recorded at times from 90 to 175 miles per hour. During the 1942-1943 season three anemometers and two instrument shelters were blown away. When a slide damaged the buildings, new materials were flown in by a B-25 medium bomber. The plane made a hazardous "bomb run" up the narrow fjord, dropped a tightly wired bundle of lumber to the men, and climbed steeply up the face of a mountain to get out of the trap. During the winter, the men aided in the rescue of a crew of a plane which had crashed on the ice cap. The station picked up the feeble radio messages from the wrecked plane and guided rescuers to it.

The weather reports radioed by the Staff at Prince Christian Sound have been an extremely important link in a vast network of Army Air Forces reporting stations for aiding all North Atlantic plane, convoy, and anti-submarine operations.

Airplane Production

Some conception of the size of the Army Air Forces may be gained from the recent statement of Mr. Robert A. Lovett, Assistant Secretary of War for Air, that over one-half of the Army's entire production in 1944 will be aircraft and its equipment.

During January, 1942, the number of aircraft produced in this country totaled 2,972. In January, 1943, the total had risen to 5,013. In September, 1943, the total reached 7,598. Even more interesting, however, is the September, 1943, total of 7,598 as compared with 117 for September, 1939, when the war started.* During November, 1943, approximately 8,800 planes were produced. At the same time that these gains in numbers were made, greater gains have been made in the size of the planes produced and in their quality as fighting weapons. Weight is a better gauge of production growth than numbers. Production of airplanes, measured on a weight basis, has increased more rapidly during the past half year than during 1942.

We make no pretense of infallibility. Calculating the demands of tomorrow's warfare is an extremely hazardous enterprise, due to the countless factors to be taken into consideration. We admit mistakes and promptly redesign or scrap the planes or equipment in question. If necessary, we will always call a retreat a retreat, and not as the Nazis euphemize it, a "successful disengagement."

The steep increases in airplane production during 1943 have been stimulated by the Army, Navy and the War Production Board in co-operation with the airplane manufacturers, and the labor unions. These Government agencies strive to increase the flow of resources to the airplane industry and to improve the efficiency of their use. During the past eight months the flow of materials, such as aluminum, to the airplane industry has been raised substantially. During the same period the airplane industry experienced a 37½ per cent rise in labor productivity.

Demands of the British, Soviet, Chinese, and other Allied Air Forces for American airplanes continue to increase. Efforts to meet these demands will not be relaxed; there is a steady increase in the combat planes being made available to them. Seven thousand planes have been sent to the U. S. S. R. under Lend-Lease.

It can now be announced that up to Oct. 1, 1943, a total of 26,900 planes have been exported to our allies by Lend-Lease or direct purchase. These aircraft are being flown over Europe from the United Kingdom, Africa, Italy, the Middle East and the Mediterranean area by British, French, Polish, Czech, Norwegian and other airmen. In the Far East aircraft produced in the U. S. are being flown in combat by Chinese, British, Australian, and New Zealand airmen. On the front from the Baltic to the Black Sea, U. S. S. R. pilots have operated our aircraft as well as their own against the common enemy.

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*The expansion of the aircraft industry is shown in the following table. Only final assembly plants are listed. Thousands of other plants which produce parts and subassemblies are not included.

I. Number of U. S. Aircraft Assembly Plants in Operation†

(Military Production Only)

Year	Engines	Propellers	Airframes
1938	4	2	9
1939	7	4	17
1940	12	4	25
1941	16	9	38
1942	22	13	51
1943	22	19	67

†Includes Canadian plants engaged in U. S.-financed activities.

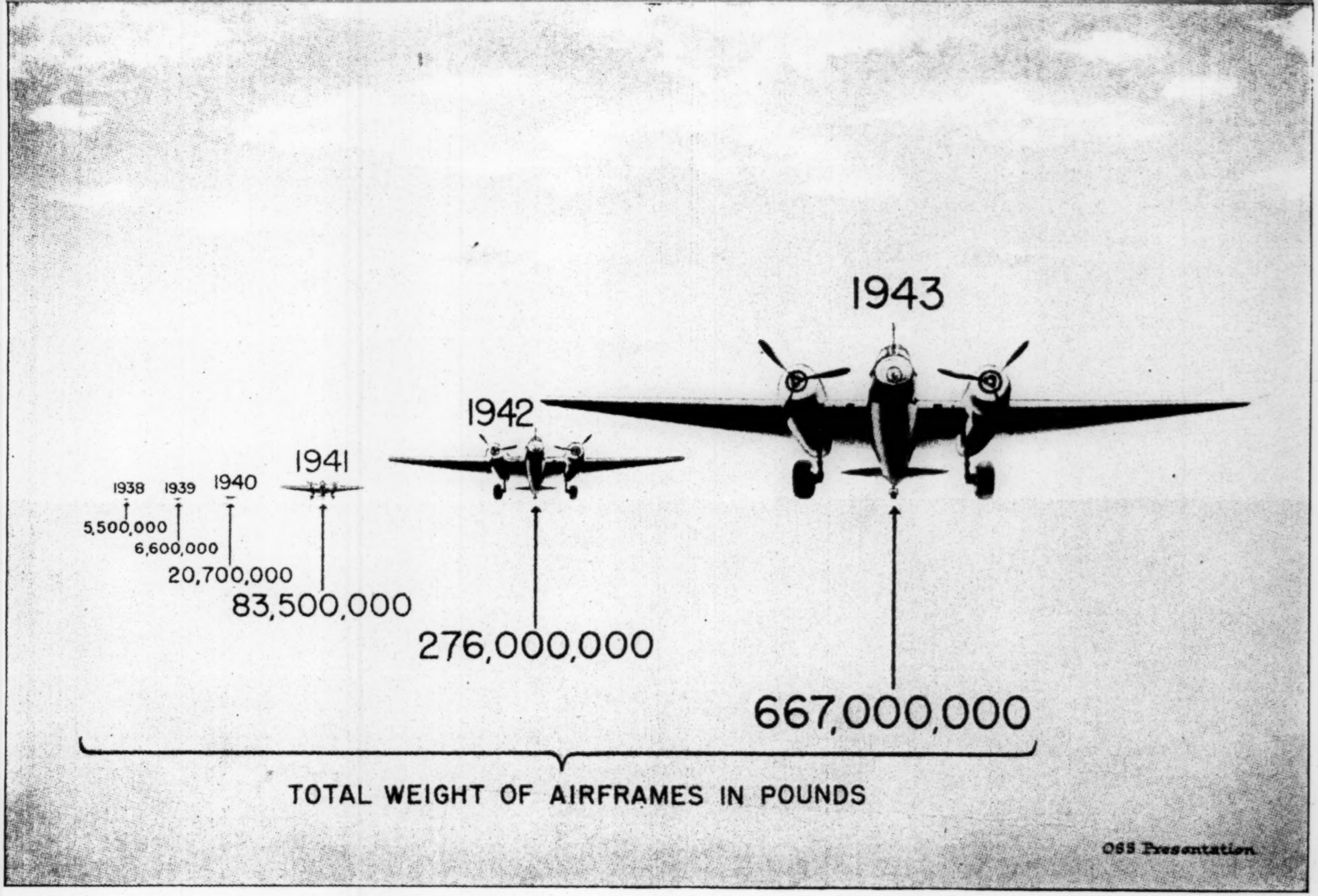
II. Number of Employees in U. S. Aircraft Assembly Plants‡

(At Midyear. Final Assembly Plants Only)

Year	Engine Plants	Propeller Plants	Airframe Plants
1938	7,000	1,000	24,000
1939	8,000	1,500	28,000
1940	25,000	4,000	86,000
1941	59,000	10,000	199,000
1942	157,000	25,000	471,000
1943	271,000	48,000	864,000
Est. for Dec. 1943	361,000	56,000	1,022,000

‡Excludes employes in Canadian plants engaged in U. S.-financed activities.

MILITARY AIRPLANE PRODUCTION



OSS Presentation

One hundred and forty-five thousand planes are scheduled for completion by the War Production Board in the next fifteen months. They will be heavier and more elaborately equipped. The average airframe weight of airplanes being produced now is twice as great as it was a year ago. The weight of heavy bombers to be produced in the next eighteen months is scheduled to exceed that of all types of planes produced in our first year and a half of war.

There must be no lag in production.

Not one of our Air Forces has the planes it should have. Every one could use double the number it now possesses. It is a difficult task to decide which Air Force must do without the planes it ought to have, knowing what our refusals mean. They mean that a hundred planes have to do what would be a tough job for two hundred. The Salerno beachhead was one of the turning points of the war, and we had just enough aircraft to cover our landing forces. The biggest battles in the air and on land are yet to be fought. We will need every plane we can produce.

Materiel Development: New Horizons

Fortunately war is not all waste. The development of new ideas proceeds apace without thought of immediate costs. There have been notable advancements in aviation during the past two years.

Many ideas come from combat. Engineers weighed the advantages of armor plate for a long time, but combat showed that it must be used—and at once. Unarmored Zeros, in spite of their reputation in the early days of the war, fell apart with the first burst from our .50-caliber guns. Power turrets, chin turrets, and greater fire power are all developments that have come from combat operations.

At Wright Field, Dayton, Ohio—the Army Air Forces have thousands of engineers and specialists who spend all their time groping—creating—studying to attain and maintain aircraft superior to those of our enemies. Wright Field designs, develops, tests new planes, engines and equipment, and supervises their procurement and production. It also tests enemy planes: German Messerschmitts, Junkers, Jap Zeros, Italian Macchis, and thousands of pieces of enemy equipment are evaluated.

Some of the more recent developments of public interest are dual-rotating propellers which offset torque, six-bladed propellers, higher-horsepower motors, amazing navigational instruments, new types of disposable fuel tanks, and the like. Wright Field made valuable advances in night color photography and in the methods of detecting enemy camouflage.

One year ago the Commanding General of the Army Air Forces stated that the B-17 and B-24 bombers were perhaps the last of the "small" bombers—that new superbombers with vastly increased speed, fire power, bomb loads, range and maneuverability were on the way. The B-29, for example, will see action in 1944.

In co-operation with the engineers and specialists of aircraft manufacturers, the Army Air Force Materiel Command designs and standardizes for production all Army Air Force aircraft. When a four-engine bomber is developed, upon Materiel Command rests the responsibility for design, testing and procurement. The complexity of aircraft production can be realized from the knowledge that a heavy bomber has over 400,000 component parts and perhaps 60,000 different parts. The manufacture of one single radial type, air-cooled engine, involves more than 30,000 major and minor inspection operations. The finished surfaces of working parts on engines are checked to a millionth of an inch.

All kinds of devices are created and tested to improve the performance of our planes and increase their effectiveness as fighting machines. Our bombing accuracy has been improved by the new Automatic Flight Control equipment, by which the bombardier operates the plane on the bombing run. The bombing run is shortened so that our pilots can go into evasive tactics sooner. With the increased accuracy fewer planes are required for a specific mission.

The Production Division of Materiel Command, in order to produce airframes, engines, propellers, and gliders, and Government-furnished equipment other than engines and propellers for our Air Forces, does business with over 500 prime contractors and 8,000 first line subcontractors for airframes, engines and propeller contractors. It must make sure that these manufacturers receive the necessary raw and fabricated materials at the proper time; expand existing factories or construct new ones where required; provide additional machines and tools; distribute parts to manufacturers to secure a balanced production; give assistance in engineering features during the development stage to insure that the product will meet our requirements; and perform all these functions so that a steady flow of airplanes is channeled to the combat areas.

The plant personnel of these 500 prime contractors is well over one and a half million persons. The subcontractors employ many more. About 40 per cent of the total aircraft employes are women. In no other industry has woman power been more effective. Women are giving excellent service in research laboratories, as engineering aides, and on the production line as first-rate welders, riveters, inspectors.

Our engineers and production personnel are not only building airplanes with performance and destructive power equal or better than those of any in the world but they are also breaking one record for production after another as the months go by. Our aircraft workers, men and women alike, have done what Adolf Hitler was sure that an unregimented people could not do: out-think, out-work and out-build his robots.

SECTION THREE: COMBAT OPERATIONS

It is not within the scope of this report to present a detailed operational history of the Army Air Forces. Certain operations are touched on because they are representative; other campaigns, strategically of equal or greater importance are left out; some episodes, minor in any historical perspective, are dealt with because they throw light on our essential problems.

Dec. 7, 1941 (December 8, Hawaiian time) found the

Army Air Forces equipped with plans but not with planes. When the Japanese struck, our combat aircraft strength was little better than a corporal's guard of some 3,000 planes; of these only 1,157 were actually suited to combat service.

We had 159 four-engined bombers. At the various bases outside of the United States, we had only 61 heavy, 157 medium, and 59 light bombers, plus 636 fighters—a total of 913 combat planes. These were apportioned among Alaska, Hawaii, the Philippines, Puerto Rico, Panama, Trinidad, Newfoundland, Iceland, Greenland, The Virgin Islands, British Guiana and the Windward Islands.

Of our total 1,157 combat planes 526 were strategically located to meet possible attacks on the Hawaiian and Philippine Islands. Within a few hours that number was reduced to 176.

The Japanese had set about their initial task with a fine attention to detail. Their work at Hickam and Wheeler Fields on Oahu was fully as thorough as at Pearl Harbor. They smashed at our airdromes, caught most of our planes on the ground, and left us without any hope of continuing our reinforcement of the Philippine air arm via Hawaii. On the island of Luzon they disposed of two-thirds of our strength before we could recover from the surprise attack and rebuild our air defense.

On Luzon, it must be said, we had maintained an air alert since November 15. Even so, General MacArthur reported that at the end of the first day of war there were only 17 heavy bombers and approximately 70 fighters left out of a force of 35 B-17s, 30 medium and 8 light bombers, 220 fighters and 23 other airplanes. In the days that followed, 14 of the B-17s managed to get to Australia, but the fighters were destroyed one after the other.

Our last two worn-out P-40s sank a couple of Japanese ships with 500-lb. bombs that had been hitched to the wings. This was the origin of our fighter bombers.

In January, 10 of the 14 B-17s plus 38 other heavy bombers, flanked by a few A-24s and P-40s, were used in Java with the then-prevailing 10 to 1 odds against them. They supplemented the Dutch, Australian and British strength in another doomed attempt to stop the relentless Japanese push to the south. They gave a good account of themselves in the Battle of Macassar Strait. On the day before the surviving 14 bombers left for Australia (the first week of March) they flew 10 missions, sinking 5 enemy ships and damaging 4 others. But not by the most sanguine stretch of the imagination could they be called an Air Force.

Those same 14 bombers formed the nucleus of our Fifth Air Force. The Fifth is now one of fifteen. The Army Air Forces which the Axis calculated would be the weak link in our chain of battle, has instead turned out to be our greatest strength and has so far supplied our margin of victory. The war has not yet been won, but certainly our offensives on all fronts have averted its loss. Our arm of the service has been in continuous contact with the enemy over all the continents and all the oceans. Since the tragic day of Dec. 7, 1941, we have been operating day and night in all conceivable kinds of terrain.

Because of the lack of patrol planes of adequate range, speed and striking power, the aircraft of our First Bomber Command were pressed into coastal patrol service. These airplanes formed the nucleus of our Anti-Submarine Command which did such superb work until its functions and equipment were taken over by the Navy in the fall of 1943.

We have proved that our prewar plane designs and prewar concepts of air strategy and tactics were sound. From the wreckage of a score of airfields scattered in the Pacific area rose an air force of 2,385,000 officers and enlisted men—a number still growing. As of Oct. 31, 1943, those men have already flown over a quarter of a million combat sorties, expended in combat more than forty million rounds of ammunition, used up nearly two billion gallons of gasoline, destroyed in aerial combat 8,478 enemy airplanes, probably destroyed 2,555 more and damaged another 2,834. These figures do not include enemy planes desroyed on the ground nor the extraordinary score run up by the American Volunteer Group in China.

In the Pacific we blasted the Japanese and promoted their hasty exit from the Aleutians; we opened up and operated a pipe line of airplanes and supplies to Australia; we were largely instrumental in saving that continent by transport and troop carrier operations of unprecedented scope. We are now helping to clear New Guinea and its neighboring islands; we are providing a lifeline to keep China in the fight.

Below and across the Mediterranean, we were in the spearhead of the offensive that has driven the Nazis from El Alamein westward, out of Tunisia and Sicily and up through Italy. The most skillful and unscrupulous of Herr Goebbels' propaganda experts have not been able to explain away our 8th Air Force which has rained destruction on the citadel of *Festung Europa*. Field Marshal Goering's boast that Germany shall never be bombed has gone the way of Admiral Yamamoto's promise to dictate peace terms from the White House.

The Pacific

Except for its fundamental premise—the assumption that the United States will eventually yield to war-weariness—Japan's original master plan was sound.

Japanese economy was organized into a central zone that comprised the island empire, and an outer zone stretching through the conquered areas. The inner zone was conceived of as a self-contained economic realm, with a virtual monopoly on the nation's industry. The ring of colonies, in accordance with both German and Japanese race theories, was to assume a vassal agricultural status; industry was to be developed only to meet local needs and to supply Japan with critical imports—heavy oil, for one.

Given time, Japan's first rapid series of conquests could be converted to form part of an enviably self-sufficient economic unit. A matchless combination of resources—nickel, tin, manganese, bauxite, rubber, oil—were seized in Malaya and the Netherlands East Indies. These are the raw materials of empire. No traditional mode of naval or land warfare could possibly have broken the defense ring that Japan counted on for consolidation. In point of fact, the ring is still largely intact.

Japan had the drop on us. Her great offensive had secured a powerful interlocking system of air bases stretching from Formosa to Burma, Malaya, the Dutch East Indies, and on through New Guinea to the Solomons and Marshalls. This network of airfields made it possible for her to concentrate even short-range fighter planes at any point—quickly—for either offensive or defensive purposes. Japan—and Germany—realized at the outset that no operation, whether sea or ground, could be successfully conducted without an air umbrella.

In the first phase of the Pacific war it was all we could do to isolate Japan's Aleutian salient, to protect our pipe line to Australia and to dam the flow of Japanese might into Australia itself. True, Gen. Ralph Royce raided the Philippines in specially equipped B-25s, and a few days later (April 18, 1942) General Doolittle and his men took off from the carrier *Hornet* on our first sweep over the Japanese mainland. But these were little more than gallant episodes in a holding war at a time when we could do no more than to hold.

Offense is the essence of air power. This principle of modern war was amply demonstrated in the Coral Sea and Midway actions of May and June respectively. In both engagements, Army Air Force bombers, operating with Navy aircraft and surface ships, helped dramatically to confirm the long-standing conviction of this country's air leaders—air power, properly deployed and employed, can stop a sea-borne force. In the Coral Sea nineteen enemy ships were sunk or damaged. At Midway, American forces sank at least 10 vessels, including 4 aircraft carriers and 2 heavy cruisers. They damaged a number of other ships and destroyed an estimated 275 airplanes.

Although the opposing ships never came within sight of each other during the entire Battle of the Coral Sea, it was largely a Navy show. The efficacy of our land-based planes operating alone against a large naval force was finally proved in the Bismarck Sea ten months later.

The crew of one of General Kenney's bombers spotted a large Japanese convoy heading toward New Guinea on March 1, 1943. Thus began the Battle of the Bismarck Sea. During the three days that followed, the crews of 162 Allied planes repeatedly attacked this convoy and its protective cover of land-based fighters. Allied heavy bombers destroyed many Japanese fighters while on the ground at their Lae, Finschhafen and Gasmata bases. Other bombers, medium and light as well as heavy, made attack after attack on the convoy with highly co-ordinated precision and mast-head skip-bombing tactics. Techniques of this sort had been developed in the course of months of hard, driving rehearsals. By March 4, the convoy had been smashed.

Both tactically and strategically, this was an outstanding operation. Besides the ships sunk, from 59 to 83 planes had been shot down and at least 9 others damaged. The Army Air Forces lost 1 B-17 and 3 P-38s in combat, and a B-25 and a Beaufighter through other causes. Total Army Air Forces personnel losses came to 13 while the Japanese lost approximately 12,700 officers and men. Entirely unassisted, the Firth Air Force, besides disposing of large numbers of airmen and sailors, wiped out an entire division of troops.

Thus the Fifth Air Force, operating in conjunction with our amphibious, naval and land forces in and around the Solomons and New Guinea, had seized the initiative in the Southwest Pacific. For the first time in that theater we were able to strike at times and places of our own choosing.

The primary objective of Allied forces in the Southwest Pacific is to advance our own network of air bases deep into the Japanese perimeter. But before this campaign could roll into its present gear, the threat to Port Moresby had to be removed. This was accomplished in the Papuan offensive through Buna and Gona.

All Japanese efforts to reinforce the Buna-Gona region were frustrated by our long-range heavy bombers. Our Troop Carrier Command flew a complete striking force—troops, equipment and food—into the area. In one air movement 3,600 troops were brought from Australia to Port Moresby, and 15,000 from Moresby over the high Owen Stanley Mountains to the air strips near Buna. These troops were not only transported but were supplied by air at a rate of more than two million pounds a week. Construction equipment and steel mats and asphalt moved by the same route. A four-gun battery of 105-mm. howitzers was ferried over by a B-17. Sick and wounded were evacuated on the way back. The entire operation proved to be of far-reaching tactical consequence.

We learned a great deal in Paqua. Maps don't show jungles, swamplands, snipers or mosquitoes. In crossing the Owen Stanley Mountains we had to cope with all these and a great many other obstacles. The only dependable way our ground forces could be supplied was by the dropping of materials from the air. At first we had no supply of parachutes. It was a straight air drop, and the recovery factor was never higher than 20 per cent.

The airdromes which spearheaded and covered our advance had to be cut out of the heart of the New Guinea jungle. Normally, it is safest to have landing fields a few miles behind the front lines, but not in New Guinea. On that terrain a few miles might mean a day's journey. There our fields often had to be built within firing range of the enemy. Natives and soldiers alike worked in hourly danger at clearing the high kunai grass and preparing the strips. After each job was completed, troops and supplies moved in by air. When the front line changed, new fields had to be cleared, leveled and topped off with landing mats—always a back-breaking process.

In the offensive on Lae, we had to build three strips in the mountains within fighter range of that Japanese concentration. We picked a site on the basis of aerial photographs, and a party of American aviation engineers made a long overland journey to reach it. With the help of natives they cleared enough ground to permit our transports to land. Then our C-47s ferried in an air-borne engineer battalion. It required over 100 C-47 loads to accomplish the transfer of the unit with its minimum equipment. In addition, an air-borne antiaircraft company had to be brought in for protection of the field. This was the way we built our Marilinan field in a month's time.

Marilinan paid for itself in one quick series of missions. It was a staging area for the striking force which, from August 17th through the 21st, destroyed or rendered wholly unserviceable 309 Japanese aircraft at Wewak.

Marilinan was also one of the bases which helped to provide fighter cover for the great paratroop landing at Nadzab, a remarkable achievement foreshadowing at least part of our pattern of victory in the Pacific.

The landing at Nadzab put an end to the carping at our early "palm-tree-to-palm-tree" advance. Here was a warfare at 200 miles an hour. In less time than it takes to read this page, our Fifth Air Force landed 1,700 American paratroops, fully equipped and supplied, plus 36 Australian artillerymen with guns.

These operations in the Markham Valley are well worthy of note. In front, 48 B-25s opened the fight by strafing Japanese positions and dropping fragmentation bombs. They were followed by 6 A-20s that laid the smoke screen which covered the landing of our paratroops from the 96 C-47s. Above these flew 5 B-17s carrying materiel, and 3 B-17s with Generals MacArthur and Kenney and their staffs. A fighter escort of 146 P-38s and P-47s covered the flight at various altitudes while at Heath's Plantation halfway between Nadzab and Lae, 4 B-17s and 24 B-24s bombed and strafed the Japanese positions. Five weather ships operated along the route and over the passes to keep units posted on conditions. This was a far cry from the days when our decimated squadrons were being blasted out of the skies over Luzon.

The day after the landing at Nadzab, the aviation engineer who had built the airdrome at Marilinan, landed a Cub plane in the jungle and arranged for Australians and natives to prepare a strip for transport planes. This was the prelude to the arrival of two air-borne engineer battalions, from Marilinan and Port Moresby, and the rapid construction of new airfields in the Markham Valley, *behind* the Japanese position at Lae which held out for ten more days.

Five weeks after the landing at Nadzab in the Markham Valley, we raided the Japanese stronghold of Rabaul. Our box score on that mission was 3 destroyers, 3 medium merchant vessels, 32 small merchant vessels, 68 harbor craft, 11 luggers and 2 patrol craft sunk or destroyed; 1 submarine, 1 submarine tender, 1 destroyer tender, 1 medium merchant vessel, badly damaged; 184 enemy planes destroyed or damaged. Our own losses were 2 B-24s, 1 B-25 and 1 Beaufighter. Our air superiority in the Southwest Pacific has since been definitely established.

The ease with which we executed our final operations in the Markham Valley may be misleading. There is long, hard planning, endless training, repeated dry runs, devoted labor and matchless ingenuity behind undertakings of this magnitude. The box scores of the Bismarck Sea, Wewak and Rabaul do not tell the story of Lieut. Col. William Benn who did so much to refine skip-bombing tactics; of the parachute fragmentation bombs used so effectively in this theater for the destruction of enemy airplanes on the ground; of Major, later Lieut. Col. Bill Gunn who crossed up the experts by packing eight .50-caliber machine guns into the rebuilt nose of the B-25; of Major Ed Larner who also helped to develop skip-bombing tactics. A report about Major Larner states that: "One time he flew so low that when an enemy shell exploded nearby, his plane staggered through some treetops at the end of the field and emerged with its nose bashed in, the front surface of its wings crushed, its belly deeply dented, and one of its engines useless. 'After that,' Larner apologized when he got home, 'I only made two more passes at the field because the plane didn't fly so good.' "

General Kenney's surprise and shock tactics have shaken the Japs out of their groove; when their routine is disrupted the Japs are baffled, and baffled Japanese do not fight well.

That is not to say Japan will fold, as the Italian Fascists have, under the mere threat of invasion. There is no doubt but that Japanese industry and shipping will have to be systematically shattered before her armies actually crumble. Our Commander in Chief has said, "There are many roads that lead right to Tokyo, and we're not going to neglect any of them."

Our bombers have begun to make their presence felt in China, although in that theater we have not yet assumed the offensive. On the Asiatic mainland, time has, in one sense, been fighting on the side of the Celestial Empire. But time is a fickle ally. Potentially, China remains our most effective base for aerial operations against Japan.

Supply is our problem in China. To supply our growing air strength in that country has been perhaps the greatest single challenge to the efficiency of the Air Forces. Every item of equipment necessary for the maintenance and operation of our 14th Air Force must be flown into China from the outside. That is the primary, fundamental fact of our present strategy in Asia.

It may throw some light to consider this fact in terms of gasoline alone. In the round trip over the Hump between Assam and Kunming, the C-87 transport now in use can deliver 4 tons of 100-octane gasoline. To do so, the airplane must consume 3½ tons of the same precious commodity.

The crews of a heavy bombardment group in China must ferry over their own gasoline, bombs, replacement parts and everything else in their own B-24s (the C-87 is a converted B-24). Before this bombardment group can go on one combat flight, it must make four trips over the Hump. To perform one extremely dangerous mission, those crews must make four separate flights over the most hazardous mountain terrain in the world. Until such time as we conquer the territory and build the road in to China, and/or capture a seaport, we must follow this procedure whether it is for 40 aircraft or 4,000.

Our problem of making supplies flow into China by no means starts in Assam. When Maj. Gen. Lewis H. Brereton and his men first arrived in India from Java they found a total of 10 airdromes in that entire sub-continent. Until that time, the British defense of India had been based on the assumption that the only threat could come from the Northwest frontier—the Kyber Pass. The Japanese seizure of Burma suddenly threatened attack not from the Northwest but the East.

A complete and rapid readjustment of defenses was in order, a formidable task in any country—let alone India. There, the enervating heat, the apathy of the natives, the total absence of modern methods and equipment, combined to form a staggering prospect.

Assam is separated from the rest of India by the Brahmaputra, one of the longest rivers in the world, and one that has not a single bridge through its length in that country. Its mean level varies with the seasons. At certain times of the year, a 25-foot rise and fall puts river ports out of commission during both flood and ebb periods.

There is no through road between Assam and Calcutta. Rail transportation is complicated by changes in gauge, and the existence of antiquated train ferries. The capacity of the inland water system was for a long time even lower than usual because power units and barges had been moved to Iraq. And during the monsoon season, nearly all non-river transportation ceases because the area is completely flooded.

The monsoon season lasts, in Assam, from mid-May to mid-November. The average rainfall is about 150 inches as compared to a 20-inch average for a similar period in, say, Virginia. Malaria is a constant threat.

Life and labor are cheap in India. Sections of tea land were cleared for our airdromes and runways were painfully built with rocks taken from the river bottom and carried in baskets on the heads of coolies. Antediluvian stone rollers, pushed by other coolies, are used to pack down the rock.

Our flying transport operations are no less difficult. The pilots who fly our transports in that weather are as exposed as any in actual combat. 17,000-foot mountains have to be cleared by instrument flying; if our men veer to the North they meet 22,000-foot peaks while to the South they drift over Japanese-held Burma. It is no country to crash-land in.

That is the route our supplies must travel *after* they have already been shipped more than 10,000 miles—supplies not only for our 14th Air Force but to help equip the Chinese Army and to build and defend China's airdromes.

And yet the 14th Air Force is in the skies over China. Under the command of a master tactician, Gen. Claire L. Chennault, American fliers of the 14th have from Feb. 2, 1942, to Oct. 31, 1943, brought down 351 Japanese aircraft, with a loss to themselves of only 68, an unrivalled record. That is not counting enemy aircraft probably destroyed or damaged.

A record of this scope is all the more impressive in that it was built up in the course of what is, by today's standards, aerial guerrilla warfare. The pre-condition of all successful guerrilla operations—an actively friendly countryside—exists in China, and the 14th has taken advantage of this by helping the Chinese create one of the most efficient aircraft warning systems in existence. Our bases are notified of the approach of a Japanese flight almost at the moment it takes to the air. This warning system was one of the factors that enabled the 14th to provide the support which helped to stop the Japanese cold in the Tungting Lake offensive of May and June, 1943.

In its primary mission of protecting the terminal bases of air transport, the 14th Air Force has been completely successful. At the same time, we know that air transport must be established for our Chinese bases. It need hardly be stated that we have no intention of allowing our air operations from the Asiatic mainland to remain on the level of guerrilla warfare. Neither Japanese shipping nor Japanese industry will survive the bombing in store for them.

The Mediterranean

The Italians, oddly enough, taught us a fine lesson in Africa as far back as the summer of 1940. They started the Libyan operations of that year with a large, powerful and modern air force. This weapon, which might well have won the campaign for them, was under the direct command of the Italian Ground Forces; local Army commanders wasted air power in penny packets to protect their own sectors or to help advance small detachments. The Royal Air Force, consisting of a handful of obsolete aircraft, but employed in concentrated mass as a true air force should be, completely destroyed some 1,100 Italian planes.

For the campaign of 1941-42, the British had a large and efficient air force in the desert. This force, in spite of Rommel's steady advance, was in virtual control of the air over the Western Desert. It was the Royal Air Force that kept Rommel from annihilating the British Army and helped, finally, to halt him at El Alamein.

Many of our present ideas about the Tactical Air Force were evolved in the heat of these desert campaigns. There is no doubt that experience and new conditions modify many of our notions, but the present concept of the Tactical Air Force can be regarded as tried and proved in North Africa, Italy and New Guinea.

The Tactical Air Force works in partnership with all the other components of air power. In North Africa it worked with the Strategical Air Force which concentrated on long-range destruction of targets like munitions establishments and supply ports; it worked also with the Coastal Air Force whose functions consisted of cutting the enemy's sea-borne supply route and of protecting our own. The Tactical Air Force is also intimately concerned with the battlefield itself.

It is misleading to say merely that the Tactical Air Force provides support to the ground troops. The word "support" always makes people think of air power as an ancillary weapon of the Army or the Navy in a land or sea operation—as long-range artillery directed by subordinate ground commanders. This narrow conception appears to be firmly imbedded in the public mind as well as in the thinking of the inexperienced soldier subjected to his first enemy stafing. Fortunately for us, it was a conception shared also by highly experienced Axis strategists.

Air "support" was found more than adequate by the Germans in their blitz through France where their domination of the skies was all but unchallenged. Both Germans and Italians found another state of affairs in North Africa. There they were first knocked out of the air and then left with the choice of being driven into the sea or surrendering. Our combined air forces and navies saw to it that no Dunkerque took place.

The Royal Air Force and the Army Air Force functioned as a unit in Africa. During the Tunisian campaign, Air Marshal Tedder, under General Eisenhower, commanded the Air Forces in the Middle East, in Malta and in Northwest Africa. Lieut Gen. Spaatz commanded all of the Northwest African Air Forces, consisting of our own 12th Air Force and part of the Royal Air Force, the units being the Strategical Air Force under Maj. Gen. Doolittle, the Coastal Air Force under Air Vice Marshal Lloyd, the Western Desert Air Force under Air Vice Marshal Broadhurst, a Photographic Wing under Colonel Roosevelt, and the Northwest African Tactical Air Force under Air Marshal Coningham. As evidence of the success of this arrangement the Luftwaffe has been knocked from the skies over the Mediterranean.

Air and ground commands of both countries were fully as integrated. The ground commander and the air commander lived side by side in the same camp, ate together at the same mess, planned and operated on equal terms in the closest possible manner. They both knew that only the long reach of air power could achieve a lightning triumph in Tunisia. The Tunisian campaign became another lucid demonstration of the soundness of having an airman run the air war while a soldier runs the ground war—but always working together.

The battle for the Mareth positions began with an air blitz on enemy airdromes. Prior to the attack of the British 8th Army, our entire air force concentrated on those airdromes. After the strength of the German Air Force had been materially reduced, our northern and central air units operated exclusively against the Luftwaffe, relieving the Western Desert Air Force and the 8th Army of any concern over German air opposition. This left the Western Desert Air Force free to employ hundreds of bombers and fighter bombers to search out enemy concentrations and to operate with great effectiveness immediately in front of the ground units of the 8th Army.

At the crisis of the battle in front of El Hamma, our tankbusters were thrown in; the enemy broke and retreated. In this operation, the 146th Panzer-Grenadiers Division was caught moving on a road and put out of commission by air attack.

After a short pause, the 8th Army attacked at Wadi Akarit. Again the air units in the north and center were concentrated on the German air establishments and once more the Western Desert Air Force was free to work at maximum intensity on the German forces deployed around Wadi Akarit. Again the enemy retreated, this time more quickly than was expected, to a semi-circle from Bizerte to Enfidaville.

At this point, it was the turn of the Western Desert Air Force to draw away what was left of enemy air power while the Tactical Bomber Force lent its strength to the attack by the 1st Army and the 2nd U. S. Corps.

The battle for the capture of German forces in Tunisia began not on April 22, when the ground forces pushed off, but four days before when we sent 90 night bombers against the German airdromes. We had guaranteed to reduce the Luftwaffe to relative impotence by the dawn of the 22nd, and we did. In two days we destroyed 112 German airplanes.

The spectacular destruction of the 20 ME-323 6-engine transports on the 22nd was part of our plan to knock the Luftwaffe down and to keep it down during the period of the ground movement forward. Those ME-323s were carrying the equivalent of a German regiment into Tunisia.

But spectacular actions of this sort were not so decisive as the steady weight of air attack that the Tactical Air Force was turning on the enemy troops in front of the 1st Army. From the 22nd on, we had free fighter squadrons sitting over the German airdromes, daring the Nazis to take the air. When they finally did come up, they were knocked down by a small proportion of our fighters. The great balance of our force was then sweeping a path for the main ground effort.

The weight of daily attack during this period was heavier than any air force had ever delivered in collaboration with an attacking army. On May 6, during the final drive from Medjez El Bab to Tunis, we flew 2,146 sorties, the great majority of which were bomber, fighter-bomber or strafing missions on a 6,000-yard front. We blasted a channel from Medjez El Bab to Tunis.

The precision and effectiveness of our bombing became dramatically evident as our ground forces moved into Ferryville, Bizerte and Tunis. The entire town and port of Bizerte had been filled with German establishments, and our planes went into attack with the intention of blotting it off the map. Gen. Laurence S. Kuter's automobile entered the town on May 9th and he drove around for over an hour without coming across a single inhabitant. In that time, he could not find a single building, however small, that had been left unscathed.

Ferryville, on the other hand, had been heavily populated with refugees. When our first troops came through, no evidence whatever of war could be discerned. The civilians seemed extremely happy to watch us take over. Ferryville's waterfront area, however, was a twisted shambles of steel, broken concrete and sunken ships. Similarly, the residential and business sections of Tunis remained intact, but its military installations had been reduced to debris.

General Kuter made another interesting observation during this phase of the Tunisian campaign, one that might well hold significance for the not too distant future. The first 25,000 German prisoners he saw on May 9th, were partly picked Nazis from two SS divisions, the Manteuffel and the Hermann Goering, and partly soldiers of the highest state of training from one Panzer division. They had been ordered to fight to the last man, to eat the last biscuit and fire the last round.

They did fight well and bitterly. *However, when it became clear to them that they would lose the battle, they gave up at once.*

The flexible, co-ordinated air weapon we had forged in Africa served us well in Sicily and in the succeeding stages of the Italian peninsular campaign. The ancient Saracens had once laid siege to the town of Enna in Sicily for 31 years and it took the Normans a quarter of a century to reduce the same stronghold. Our ground troops landed on the island on July 7, 1943, and by August 17, the last Axis soldiers had surrendered or fled across the Strait of Messina.

With the date of our landing at Salerno set, our air force swept forward with its full power. Our first objective was to disrupt the enemy's flow of supplies and reinforcements, and to isolate German divisions by dislocating the entire rail and communications system. To this end, we raked Italy from the toe to the Brenner Pass, flying 4,419 sorties and dropping 6,230 tons of bombs between August 17 and September 6. The damage we inflicted on key railroad junctions, rolling stock and repair facilities is still crippling the Nazi resistance on the Peninsula. In this first phase we also concentrated on destroying airdromes as well as aircraft in the air and on the ground.

From September 9 to September 11, we set about isolating the battle area. In this phase we flew 1,006 sorties and dropped 1,679 tons of bombs, achieving virtually complete interruption of traffic on the main lines leading to the contested region.

On September 12, our Strategic Air Force joined the operations. On the next day, nearly all our bombers flew two sorties apiece. By September 14, whole towns in the area had been obliterated, motor transport concentrations smashed, and severe casualties inflicted on enemy troops. In those four days we flew 2,407 sorties and dropped 3,122 tons of bombs.

On the morning of September 13, the commanders of our air-borne troops were notified that air reinforcements were required by the United States Fifth Army within 24 hours. At 2045 hours on the same day, Pathfinder units of the air-borne task force took off from their Sicilian base, reaching the drop zone prepared by the Fifth Army on the Salerno beachhead at 2314. Twenty-five minutes later the first elements of the paratroopers arrived. In one and a half hours 90 aircraft dropped 1,300 paratroopers and equipment in an area approximately 1,200 x 800 yards. By 0200 hours, September 14, these paratroopers were completely organized and marching into position on the front line. Many of the units had had less than two hours to give their planes a final servicing, arrange take-off plans and to load men and equipment.

On September 14, the operation was repeated, this time with 131 C-47s dropping 1,900 paratroopers in the same zone while 40 C-47s carried a battalion of infantry and a company of engineers to a zone five miles southeast of Avellino, behind the enemy lines. Just 24 hours after completing these three jobs without a fatality, the troop carriers were back at work, flying in essential supplies to the Fifth Army and evacuating wounded.

There was no resisting an effort of that magnitude. The Army Air Force did much to save the day at Salerno. The breach it helped make in the European Fortress can never again be sealed.

During one year's operations (from Nov. 8, 1942, through Nov. 7, 1943) in the Mediterranean Theater, Allied aircraft of the Northwest African Air Forces dropped 92,233 tons of bombs on enemy installations and supply routes. Of this total 65,377 were dropped by the AAF. We hit targets in Austria, Yugoslavia, Greece, Albania and France as well as in North Africa and Italy.

In this theater we destroyed in aerial combat and on the ground 5,511 enemy aircraft, probably destroyed 750 and damaged 1,903. Of the total destroyed it is estimated that 4,100 were German, the rest Italian. Aircraft found abandoned in enemy territory including Tunisia, Pantelleria, Sicily, Italy and Corsica total 3,491; of these 1,986 were German and 1,505 Italian. Complete reports on Sardinia have not been received at this writing. An additional 231 aircraft were found at the Castel Benito airdrome, near Tripoli, but these are excluded from the above totals because they had previously been reported by the Middle East Command.

During the same year, ending Nov. 7, 1943, the Northwest African Air Forces sank a total of 185 merchant ships, totaling 173,400 tons; probably sank 110 ships, totaling 187,000 tons; and damaged another 243, totaling 373,700 tons.

In the meantime, the Malta, Middle East and Ninth U. S. Air Forces accounted for at least another 2,500 enemy aircraft, and dropped at least 45,000 tons of bombs.

Today, the Mediterranean is *Mare Nostrum* indeed.

The Air Offensive Over Europe

Public opinion about the employment of our air power over Europe has oscillated between extremes. In the jubilation over the fall of Pantelleria, some analysts forecast a similar fate for Axis-dominated territories on the Continent. Then, after 60 of our bombers failed to return from the air battle over Schweinfurt (Oct. 14, 1943), the same analysts decided that our prospects were gloomy indeed.

At Pantelleria, the garrison of the Spadillo airport placed a white cross on the ground. For the first time in history, a fortified position of that strength surrendered directly to an air force. But the air attack on Pantelleria was conducted under virtually ideal laboratory conditions. The island is only 32 miles square; the blockade by the Royal Navy was complete; fighter protection for our bombers was continuous against negligible air opposition.

Moreover, on landing we discovered that another kind of garrison could have continued to fight. Its casualties were surprisingly light. Undamaged aircraft reposed in underground hangars that were almost intact. There was still water and food on the island. The will to fight, however, had been destroyed.

To destroy the will to fight is one of the secondary objectives of our air offensive against Germany; we do not expect white crosses to appear tomorrow on the runways at Templehof. Our *primary* concern, simply stated, is to make the coming invasion of Germany as economical as possible by drastically reducing the war potential of the Third Reich and its satellites.

Our strategic air plan is predicated on the fundamental fact that our bombers can fly deep into enemy territory, drop an effective load of bombs, and return to base without losses disproportionate to the damage accomplished. We have proved that we can do this.

Our first step in the strategic bombing offensive is the destruction of the enemy's fighter strength. This is the logical operation to be carried out while we are developing our bases and building up our bomber fleet. It is a course dictated not only by logic but by the prime necessity of protecting our own aircraft.

Fighter strength can be knocked out on the ground, in air combat or in the various stages before it rolls off the production line. We know that the nearer to the final assembly stage we attack enemy aircraft, the less time he will have to replenish his front-line strength. Conversely, the farther away from the assembly stage his fighter aircraft industry is bombed, the more time he will have to take remedial steps. For quick results, we take out the assembly plants, but for some of the more lasting effects we concentrate on a system of targets deeper in the industry. The destruction of a plant making steel for airplanes is felt in a matter of weeks while the destruction of a coal mine does not affect the industry for months.

The next objective of our bomber offensive is the smashing of industrial targets vital to the enemy's military strength on the ground. In the selection of these targets, Air Intelligence must answer questions such as these:

(1) What are the minimum production requirements of the enemy?

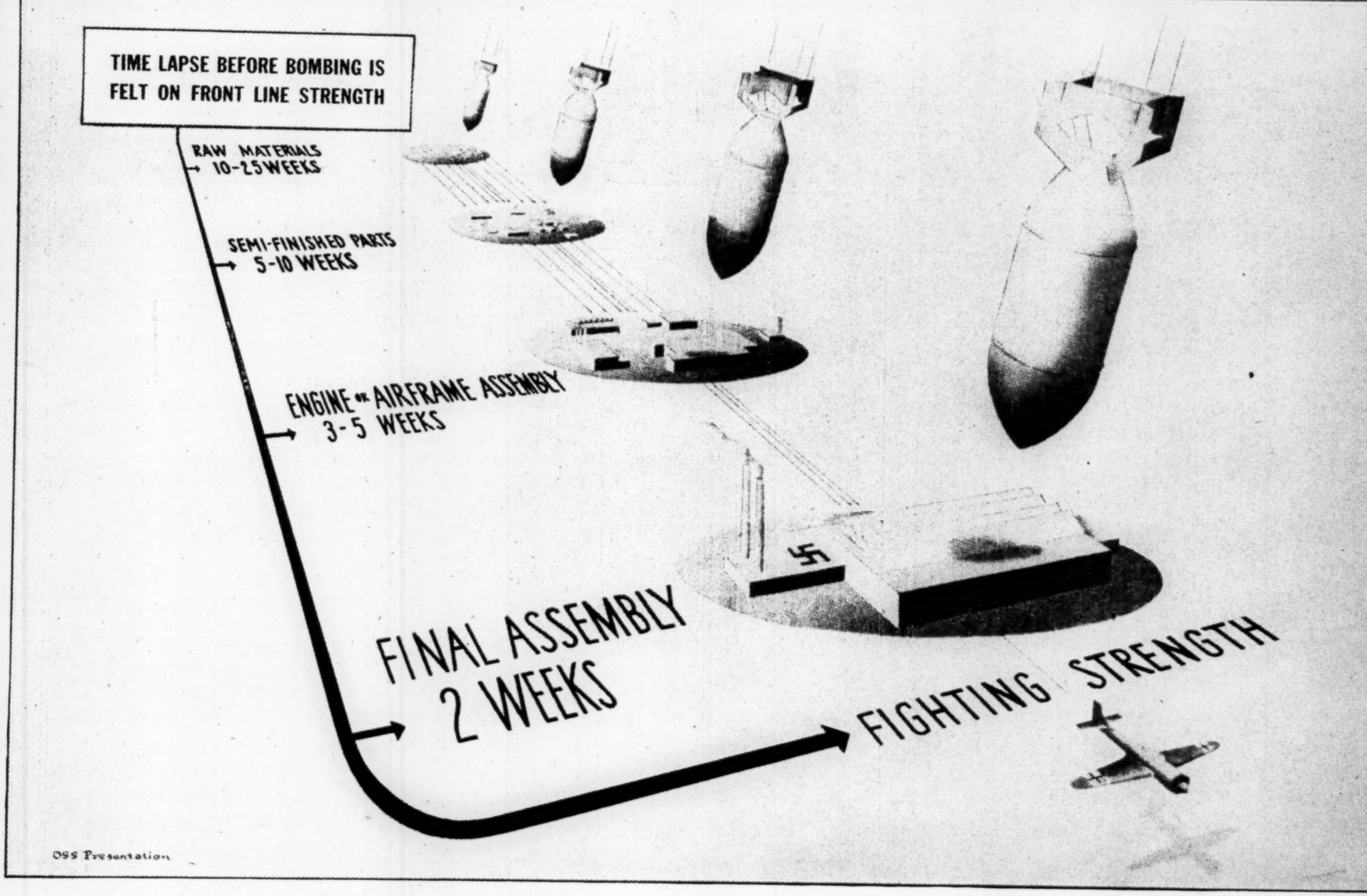
(2) What is his production capacity in his own or in occupied territory?

(3) Taking into account stock piles and available substitutes, what is the ratio between minimum requirements and maximum capacity?

(4) Where are his plants and installations located, and what percentage of the total capacity is represented by each plant?

BOMBING ENEMY INDUSTRY WHERE IT HURTS

MINIMUM ELAPSED TIME BETWEEN DAMAGE TO VARIOUS LEVELS OF AIRCRAFT INDUSTRY AND ITS EFFECT ON FIGHTING STRENGTH


TIME LAPSE BEFORE BOMBING IS FELT ON FRONT LINE STRENGTH
RAW MATERIALS 10-25 WEEKS
SEMI-FINISHED PARTS 5-10 WEEKS
ENGINE OR AIRFRAME ASSEMBLY 3-5 WEEKS
FINAL ASSEMBLY 2 WEEKS
FIGHTING STRENGTH

OSS Presentation

(5) What is the structural resistance of the buildings and the machinery to explosives and incendiaries?

(6) To what extent is the equipment irreplaceable?

(7) What is the time lag between the destruction of each plant and the effect on front-line strength?

(8) What forces are required to effect each specified destruction?

Contrary to prevailing beliefs, all industry is not absolutely essential to every belligerent country. Industrial damage even on a very large scale might have absolutely no effect on the front-line strength of a warring nation for 20 years or longer.

For example, nothing would seem to be more essential to the waging of war than steel. Yet, actually, only a small proportion of the steel manufactured in any modern industrial nation goes directly into front-line strength. Fully two-thirds goes into plant maintenance and expansion or civilian consumption channels.

Consequently, steel plant destruction, short of 66 2/3 per cent of the entire industry, pays no immediate dividends.

Germany started the present war with a steel production of under 25,000,000 tons a year, but has since acquired by conquest another 25,000,000 tons. For every plant now producing steel in Germany, there is a standby plant waiting to come into production if the German plant is destroyed. It is the enemy's capacity to produce that must be considered and not his present production rates.

Taking another case in point, if the sources of 90 per cent of German electric power were destroyed in one week, the results might well be decisive. All industry would halt. Light and water facilities would be cut off. Hospitals would be closed, sanitation systems would cease to function. Much necessary transportation would be paralyzed. Repairs, except on a limited scale, would be impossible because all the facilities for manufacturing spare parts would be hopelessly swamped.

But spread the same destruction over a 12-month period, and the story is different. True, the bombing of specific electric power targets may serve certain immediate military purposes. From a long-range point of view, however, destruction spread out over a year would be hardly noticed in terms of front-line strength. In the first place, our enemy's reserve and spare parts industry would never be taxed to the utmost. Then, too, he could set up a rigid system of military priorities to absorb the piecemeal losses of electric power. He could cut off nonessential loads in favor of vital industry, public health demands and military necessity.

Given enough time, the enemy can recover from anything. Before destruction begins to affect front-line strength, it must, as a rule, cut through considerable and sometimes enormous layers of fat. Our knowledge of the time lag must therefore be exhaustive and precise. At the same time, innumerable other strategic considerations enter the picture.

In brief, no bombing mission can be regarded as a single, self-contained operation. Each mission is thoroughly planned, with long-range objectives in view. Probabilities of error and minimum resultants are considered. Our strategy is based on a blueprint of scientifically calculated attrition.

When our heavy bombers led by the present Commanding General of our 8th Air Force, Ira C. Eaker, attacked the railroad yards at Rouen on Aug. 17, 1942—that could be called a raid. But assaults such as the ones on the Renault works, Huls, Ploesti, Heroya, Regensburg, Marienburg, Schweinfurt or Wilhelmshaven were major battles that had to be planned as such. The effects of some of our four-hour operations are felt a great deal more keenly than a long drawn-out ground struggle for a particular locality.

It is estimated that between the collapse of France in May, 1940, and March, 1942, the Renault Motor Vehicle and Armament Works produced approximately 10,000 trucks, and a substantial amount of military material such as armored cars, guns, munitions, and aircraft engines. On March 3, 1942, the Royal Air Force carried out a successful night bombardment attack which damaged and burned out most of the plant. The importance which the Germans attached to this industrial unit was indicated by the rapidity with which repair and reconstruction were undertaken. In December, 1942, Renault output had again reached the pre-bombardment rate of production. By the beginning of 1943, the plant accounted for approximately 10 per cent of total German production of this type of war material.

On April 4, 1943, our Eighth Bomber Command dispatched 97 B-17s to execute high-altitude bombardment against the reconstructed Renault Works. The British Ministry of Home Security estimated that, as a result of this attack, the output of the Renault plant could not be restored to pre-bombardment level in less than five months. One authoritative evaluation characterizes the effect of this mission as equivalent to an estimated loss of 3,000 trucks. This was accomplished with a loss of 4 B-17s. German casualties came to 47 fighters destroyed, 13 probably destroyed, and 6 damaged.

Two and a half months later we went after some of the German rubber industry for the following reasons:

(1) Rubber is a highly expendable essential in modern war.

(2) The Western Axis had almost no stocks of natural rubber.

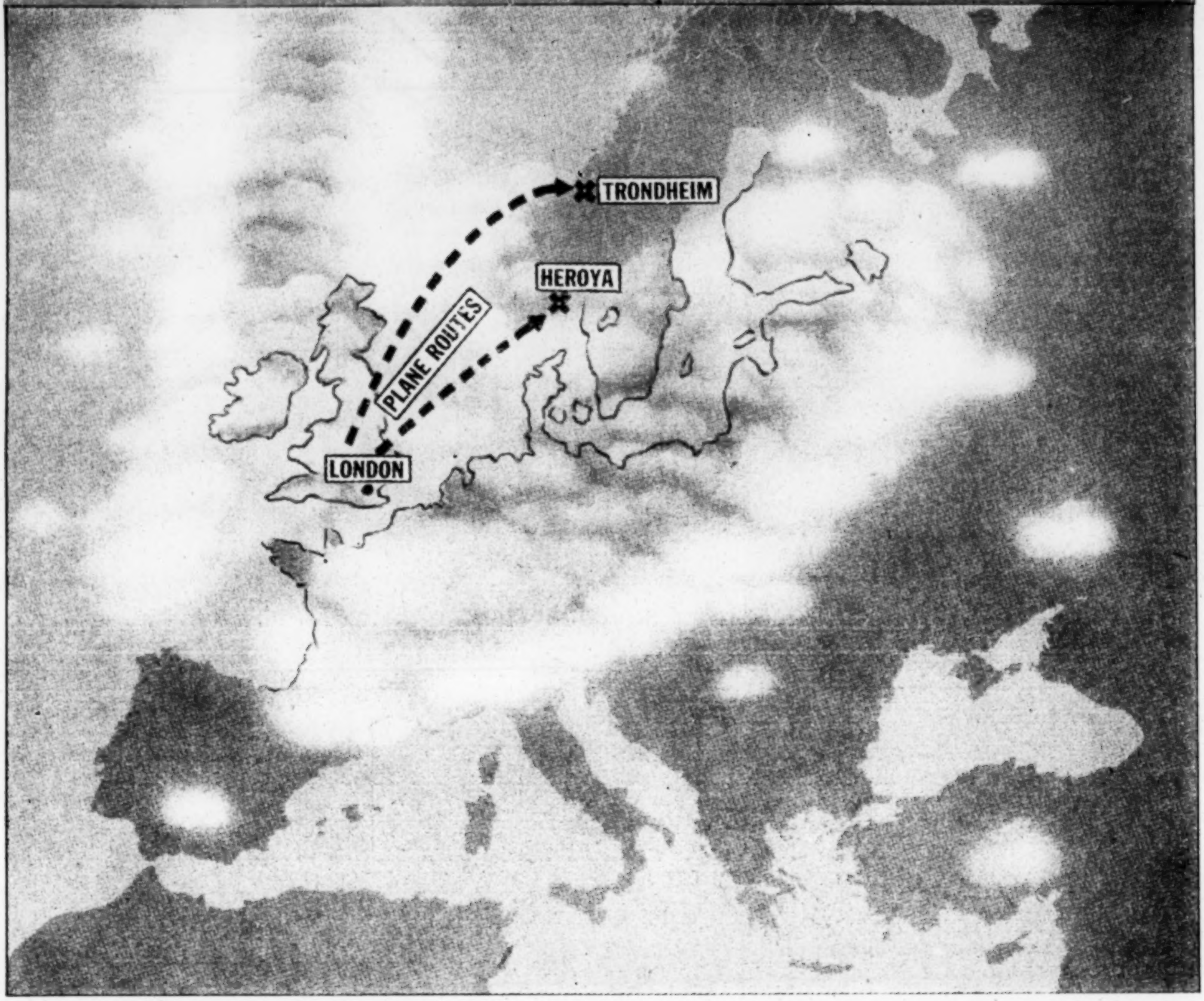
(3) A large percentage of Germany's total supply was concentrated at Huls and Schkopau.

On June 22, 1943, bombers of our 8th Air Force almost totally destroyed the plant at Huls. As a result of the battle, three months of synthetic rubber production is estimated to be lost to the Axis. Subnormal operation may have lasted six months. The supplies of synthetic rubber to Sweden have been altogether stopped.

On Aug. 16, 1943, the plant was still inactive and few repairs had been made. There was no rolling stock in the main works, and bomb craters had not been filled in. This loss in production must be borne principally by Germany's armed forces since her civilian and industrial consumption of synthetic rubber normally amounts to only 15,000 tons annually, a quantity that can hardly be pared down.

In some of these major battles, our losses have been

WEATHER CHART - MISSION OF 24 JULY 1943



THE BOMBARDMENT OF HEROYA-TRONDHEIM

Weather predictions play a vital role in air war. For eight days preceding the 24th of July, 1943, heavy bombers of the 8th Air Force had been inactive due to cloudy weather over Western Europe. Again on the 24th dense clouds persisted over targets in France, Germany and the Low Countries.

But the weather forecaster for the 8th Air Force had said well in advance of the mission, that although clouds would be thick over the North Sea and near the Norwegian coast, excellent weather for high-level daylight precision bombardment would prevail over inland Norway on the 24th.

Weather encountered on the mission was as predicted and after being over dense strato-cumulus clouds to within a few miles of the targets, the bombers broke into the clear and found their principal targets, Heroya and Trondheim, unobscured. Primary targets were well covered and the bombing was excellent. The longest mission of the 8th Air Force to that date was a success.

entirely negligible. On July 24, 1943, we struck a blow at the largest and most ambitious industrial project undertaken by the Germans in Norway—the Heroya Magnesium, Alumina and Aluminum Plant. The estimated capacity of this vast self-contained production unit was 10,000 tons of magnesium, 25,000 tons of alumina, 12,000 tons of aluminum and 3,000 tons of cryolite. Had its operation not been suspended by our attack, it would very shortly have been functioning at full capacity. In a few moments, however, it was transformed into a gigantic, if not impossible, repair task. The British Ministry of Economic Warfare considers it unlikely that this plant will ever be repaired.

Of the 180 B17s dispatched against Heroya, only 1 was lost—forced down over Sweden as a result of flak damage. Its crew is safe.

Similarly, in our attack on the Focke-Wulf Assembly Plant at Marienburg in East Prussia (Oct. 9, 1943), only 2 out of 100 B-17s were lost. The concentration of bomb bursts on this target was so great that there is sound reason to evaluate this as one of the finest examples of precision bombing to date. The attack was made in daylight from altitudes between 11,000 and 13,500 feet. Several hundred 500-lb. G. P. bombs and 1300 x 100 lb. incendiaries were dropped. Study of reconnaissance photographs has convinced photo interpreters in the United Kingdom that *every* factory building and *all* the hangars had been damaged. And this plant had been turning out about one-half (110 per month) of all of Germany's FW-190 fighters.

It stands to reason that not all our attacks should be so successful. At Stuttgart (Sept. 6, 1943) we lost 45 out of 338 B-17s, destroying 84 enemy aircraft, with 30 probables and 25 damaged. The bombing itself had poor results. Heavy clouds obscured the primary objective, and it was necessary for our bombers to select secondary targets and even targets of opportunity. Forty-five Flying Fortresses, fully crewed, are a big price to pay.

At Regensburg (Aug. 17, 1943) and Schweinfurt (Oct. 14, 1943), we also paid heavily, but our sacrifices were amply justified by results.

It is possible that the Schweinfurt mission in which we lost 60 of our bombers may prove to have been one of the decisive air actions of the war. The plants of Schweinfurt produced over 50 per cent of Germany's ball bearings. The vital importance of ball bearings in industry and the fact that it is not practicable to assemble large stock piles of them, made these plants a first-priority target. A bottleneck in ball bearings is a bottleneck in essential industry. The intensity of fighter opposition made it clear that the Germans are fully aware of this.

More than 300 German fighters participated in the action, making more than 700 separate attacks. 99 of these fighters were destroyed, 30 probably destroyed and 14 damaged. But more important, all five of the works at Schweinfurt were either completely or almost completely wiped out. Our attack was the most perfect example in history of accurate distribution of bombs over a target. It was an attack that will not have to be repeated for a very long time, if at all.

As we go deeper into Germany, we hurt her more and pay higher prices. In a sense, it is bombardment in depth against defense in depth. Inevitably, our campaign must be accompanied by production in depth on the home front.

The price of 24 B-17s that we paid for our midday attack on the Messerschmitt aircraft factory at Regensburg is, in perspective, relatively small. It is estimated by competent authority that this single action caused a loss in production of 500 ME-109s. The Luftwaffe was hurt in the air almost as seriously as it was on the ground. More than 200 fighters of several types pressed a strong attack; 140 were destroyed, 19 probably destroyed and 36 damaged. Tremendous efforts are being made to get this plant back into production.

The equipment of our escort fighter aircraft with extra long-range disposable fuel tanks now enables them to give our bombers continuous cover to and from targets formerly out of tactical range. Another factor of great importance is the development of navigational aids so accurate that enemy targets can now be attacked by bombing through the overcast or at night.

The general pattern of German reaction to 8th Air Force operations shows a number of especially significant trends:

(1) General unwillingness of fighter forces to join combat with invading aircraft other than heavy bomber formations.

(2) Furious all-out attack, with little heed of fighter losses, on heavy bombers dispatched against key targets; this is true particularly when bomber formations are unescorted.

(3) Increasing employment of fighters equipped with cannon of larger than 20-mm. caliber, and of fighters (in many cases twin-engined) firing long-range rocket projectiles.

These factors point definitely to:

(1) The need of Germany to conserve available fighter strength.

(2) The effectiveness of our bombing which forces on the Luftwaffe the necessity of stopping such attacks at any cost.

(3) A search for effective new weapons; in particular long-range weapons that permit attack from outside the lethal range of our formations' .50-caliber machine-gun defense.

In view of the high rate of attrition of German fighter aircraft on the western front the near future appears likely to be a crucial period which may determine the survival or destruction of the Luftwaffe as an effective air force. If the present rate of attrition keeps up, and German aircraft factories producing these fighters continue to suffer progressive destruction, a point will be reached where German reserves are exhausted and only a trickle of new replacements can be supplied.

The destruction wrought by Allied bombers has shown that the operations of the Army Air Forces and the Royal Air Force are complementary. The RAF and the AAF work together. In recent weeks the Royal Air Force bombardments of military objectives in Berlin are worthy of special praise. During a single night more than five million pounds of high explosives were dropped on chemical works and war industries in Berlin and its suburbs. Although the Nazis have increased their production of fighter planes, they have not stopped the bombers from taking total war to the German capital.

It is difficult to appraise the present struggle for air supremacy as representing anything short of a major turning point in the war. What American and Royal Air Force bombers can do to the whole German war machine, once the German fighter force is rendered impotent, needs no comment. The issue hangs now on which side first falters, weakens, and loses it punishing power.

Clearly, the cost in money, men or equipment for a few isolated missions—much less for one mission—is never a reliable basis for judging the success of our strategic operation as a whole. It is the over-all cost to us, in relation to our ability to bear that cost, measured against the over-all result and the enemy's ability to endure that result, which must decide for or against the resolute prosecution of a military campaign.

To a question posed in those terms, there is only one answer. We will not falter.

SECTION FOUR: THE MEN

Nowhere in the world are the lives of men as interdependent as in a bomber on a mission. The pilot must be quick, daring, cautious. The gunners must draw a bead on shadows flashing past them at six hundred miles an hour. The navigator has the plane in the palm of his hand from start to finish; every minute he strays off the course makes it 60 seconds less likely that he and his comrades will return. If the bombardier misses, the sortie has been pointless. He takes over at the moment of greatest danger when the airplane must be in level flight and not engaging in evasive action. During the bomb run, the plane must be traveling a straight course, with speed and altitude constant. No dead engine, or groaning companion with a leg shot off, must interfere with the operation of an intricate bombsight.

In military reports soldiers are spoken of as "personnel" or "the human factor." Let us not take exception to the usage. Let us not forget, either, that those soldiers are *men*.

The nervous strain imposed on them is much greater than any physical effort. After a certain period of operational flying, the average crew member's efficiency curve will start going downhill. Then he must be replaced not only for his own welfare but for the safety of his companions and his airplane.

Charts, graphs and strategy would mean nothing without the devotion, anger and bitter pride of our men. The reading public has been almost surfeited with fabulous accounts of how they live and what they do, how after having had three engines and a wing shot off, they come in on the other wing, one engine and a prayer. Unfortunately, it always takes two wings and usually two engines to return. The crews are made up of men, and it is as men—not as heroes—that they have to fight this war. It is a dirty war, as dirty as any.

Heroes or not, our men have done heroic things. Privates, sergeants, generals have put their lives on the line —not without regard to consequences, as some like to think—but knowing full well what the odds were.

On the training fields of the United States other men are making another kind of sacrifice. Top fliers themselves, they have been wanting more than anything else to get into combat. Cadets whom they have taught to fly return home, loaded with honors and higher than they in rank, perhaps. But every German or Japanese plane brought down is a tribute to the quality of their work. They are the instructors.

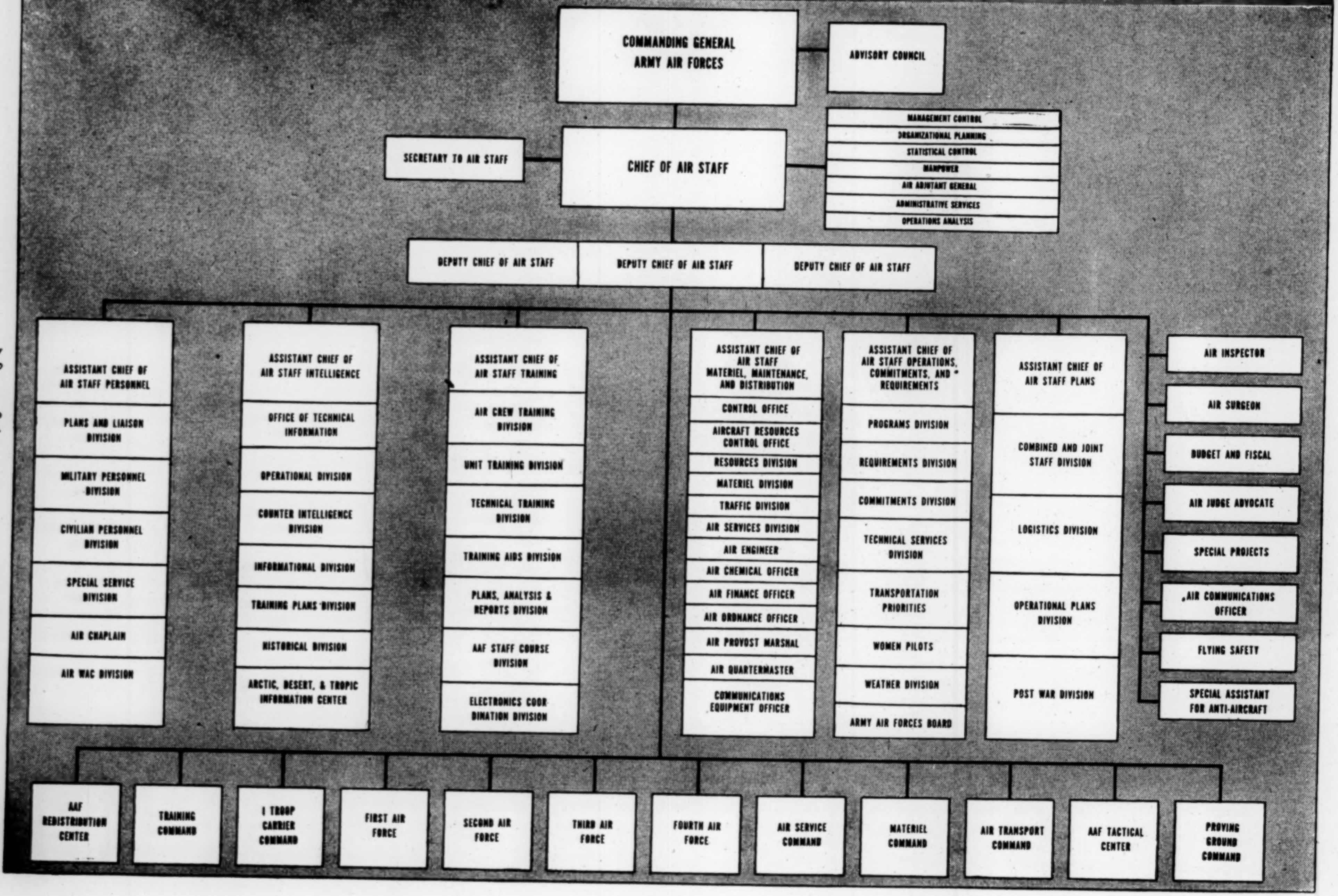
There are weather observers in lonely Aleutian outposts, communications men in a globe-circling network, Army engineers who built fighter strips where no human being had ever penetrated, Navy crews who brought in supplies under skies filled with Zeros—men who kept the Army Air Forces in the air as surely as any pilot.

Behind them and behind every man in uniform are the men and women who work in our aircraft factories, the farmers who raise their food, the miners who bring up the ore, the women who make parachutes, the 600,000 volunteers who acted as plane spotters until they could be released for other defense work.

But final tribute must be to the airmen who pit their flesh, skill and steel against the flesh, skill and steel of our enemies. It is they who are *fighting* this war.

H. H. Arnold
General, U. S. Army
Commanding General, Army Air Forces

ORGANIZATION - THE ARMY AIR FORCES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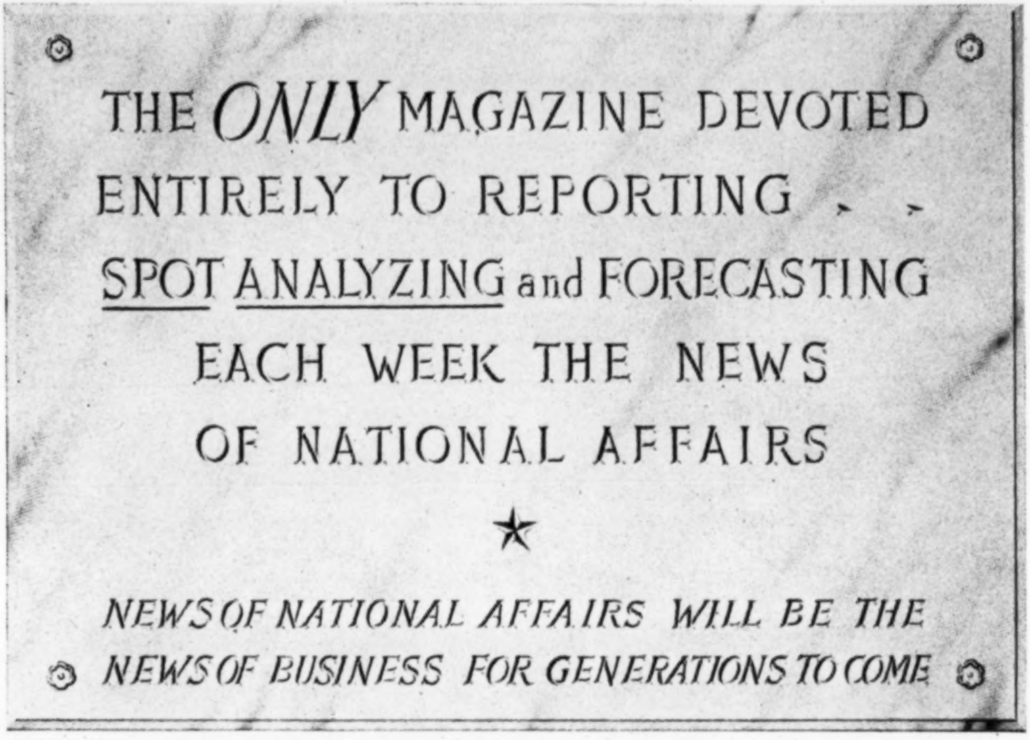
AIR SURGEON
BUDGET AND FISCAL
AIR JUDGE ADVOCATE
SPECIAL PROJECTS
AIR COMMUNICATIONS OFFICER
FLYING SAFETY
SPECIAL ASSISTANT FOR ANTI-AIRCRAFT
AAF REDISTRIBUTION CENTER
TRAINING COMMAND
I TROOP CARRIER COMMAND
FIRST AIR FORCE
SECOND AIR FORCE
THIRD AIR FORCE
FOURTH AIR FORCE
AIR SERVICE COMMAND
MATERIEL COMMAND
AIR TRANSPORT COMMAND
AAF TACTICAL CENTER
PROVING GROUND COMMAND

DATES OF ACTIVATION AND COMMANDING OFFICERS OF THE ARMY AIR FORCES

Air Forces	*Activation Dates*	*Redesignated*	*Commanding Officers*	*Appointed*
1	18 December 1940 as Hq. & Hq. Sq. Northeast Air District.	9 April 1941 First Air Force	Maj. Gen. Herbert A. Darque	July 1941
			Col. Henry L. Barrett	Feb. 1942
			Maj. Gen. Follett Bradley	March 1942
			Maj. Gen. James E. Chaney	July 1942
			Maj. Gen. Ralph Royce	April 1943
			Maj. Gen. Frank O'D. Hunter	Sept. 1943
2	18 December 1940 as Hq. & Sq. Northwest Air Dist.	9 April 1941 as Second Air Force	Maj. Gen. Millard F. Harmon	July 1941
			Maj. Gen. Frederick L. Martin	Jan. 1942
			Maj. Gen. Robert Olds	May 1942
			Maj. Gen. Davenport Johnson	Feb. 1943
			Maj. Gen. St. Clair Streett	Sept. 1943
3	18 December 1940 as Hq. & Hq. Sq. Southeast Air Dist.	9 April 1941 as Third Air Force	Maj. Gen. Walter H. Frank	Nov. 1941
			Brig. Gen. Carlyle H. Wash	June 1942
			Maj. Gen. St. Clair Streett	Dec. 1942
			Maj. Gen. Westside T. Larson	Sept. 1943
4	18 December 1940 as Hq. & Hq. Sq. Southwest Air Dist.	9 April 1941 as Fourth Air Force	Maj. Gen. Jacob E. Fickel	Jan. 1941
			Maj. Gen. George C. Kenney	April 1942
			Maj. Gen. Barney M. Giles	July 1942
			Maj. Gen. William E. Kepner	March 1943
			Maj. Gen. William E. Lynd	July 1943
5	20 September 1941 as Hq. & Hq. Sq. Phil. Dept. Air Force	28 Oct. 1941 as Hq. & Hq. Sq. Far East Air Force 5 Feb. 1942 as Fifth Air Force	Maj. Gen. Lewis H. Brereton	Nov. 1941
			Lt. Gen. George H. Brett	Feb. 1942
			Lt. Gen. George C. Kenney	Sept. 1942
6	20 October 1940 as Hq. & Hq. Sq. Panama Canal Air Force	5 Aug. 1941 as Hq. & Hq. Sq. Caribbean Air Force 5 Feb. 1942 as Sixth Air Force	Maj. Gen. Davenport Johnson	Dec. 1940
			Maj. Gen. Hubert R. Harmon	Nov. 1942
			Brig. Gen. Ralph H. Wooten	Nov. 1943
7	1 November 1940 as Hq. & Hq. Sq. Hawaiian Air Force	5 Feb. 1942 as Seventh Air Force	Maj. Gen. Frederick L. Martin	Oct. 1940
			Maj. Gen. Clarence L. Tinker	Dec. 1941
			Brig. Gen. Howard C. Davidson	June 1942
			Maj. Gen. Willis H. Hale	July 1942
8	28 January 1942 as Hq. & Hq. Sq. Eighth Air Force	18 Sept. 1942 as Eighth Air Force	Lt. Gen. Carl Spaatz	June 1942
			Lt. Gen. Ira C. Eaker	Dec. 1942
9	2 September 1941 as Hq. & Hq. Sq. 5th Air Support Command	8 April 1942 as Hq. & Hq. Sq. Ninth Air Force	Maj. Gen. Lewis H. Brereton	Oct. 1942
10	12 February 1942 at Patterson Field, Ohio	1 Feb. 1943 as Hq. & Hq. Sq. Tenth Air Force	Maj. Gen. Lewis H. Brereton	March 1942
			Maj. Gen. Clayton L. Bissell	Aug. 1942
			Brig. Gen. Howard C. Davidson	July 1943
11	15 January 1942 as Hq. & Hq. Sq. Alaskan Air Force	5 Feb. 1942 as Eleventh Air Force	Maj. Gen. William O. Butler	Feb. 1942
			Maj. Gen. Davenport Johnson	Sept. 1943
12	20 August 1942 as Hq. & Hq. Sq. Twelfth Air Force	—	Maj. Gen. James Doolittle	Sept. 1942
			Lt. Gen. Carl Spaatz	Feb. 1943
13	13 January 1943 as Hq. & Hq. Sq. Thirteenth Air Force	—	Maj. Gen. Nathan F. Twining	Feb. 1943
14	10 March 1943 at Hq. & Hq. Sq. Fourteenth Air Force	—	Mai. Gen. Claire L. Chennault	March 1943
15	1 November 1943 as Hq. & Hq. Sq. Fifteenth Air Force	—	Maj. Gen. James H. Doolittle	Nov. 1943



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MILITARY SERVICE (WOMEN) - 1945

Women's Bureau

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25 October 1945

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Dear Sirs;

The members of this Detachment would like to receive any information available on industrial jobs open to womnn. Information as to types of employment that offer~~s~~ the greatest advancement for women, types of training and skill in demand by industry etc. is particularly desired.

Request such information be sent to Commanding Officer, WAC Detachment, IRTC, Camp Hood, Texas.

Sincerely,

Vera M Ford
VERA M FORD
1st Lt WAC

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WAC	391
Regarding	Date

Letter from Sgt. Lea P. Eisenberg
W.A.C. July 9, 1945
in re future jobs

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Bureau of Public Relations
Women's Section
Army Service Forces

IMMEDIATE RELEASE

August 11, 1944

ARSENAL HEROINE

When a fire broke out in her section of the bomb producing area at the Army's largest chemical warfare service munitions unit, Mrs. Teddie Givens calmly removed a burning bomb from the line and threw it into the street. Officers at the Pine Bluff, Arkansas, installation declared this bit of quick thinking cleared the conveyors for those bombs still passing on the rollers, thus saving lives of workers and damage to public property.

A commendation from the arsenal's production chief went to Mrs. Givens who is employed as a munitions handler, for heroism over and beyond the line of duty.

################

G. I. SHOES FOR WOMEN

Combat boots for a modern Cinderella could no doubt be found among the 2,257,323 pairs of all types of footwear bought since the Jap attack on Pearl Harbor for G. I. Josephine of the Women's Army Corps and her sister officers in the Army's Medical Department. The fairy tale maiden might have to go to the Boston Quartermaster Depot, the procurement center for all Army footgear but at least one of the 4,000 pairs of women's "Combat" boots bought for overseas use since last January should be found to fit her famous foot.

Until recent legislation giving women officers of the Medical Department full military rank and a money grant for clothing, shoes were an item of the regular Quartermaster issue for this militarized personnel. Officers of the Women's Army Corps also buy their own footwear as do the male officers of the Army.

Comparatively speaking, the Army's shoe bill for its service women during the first five months of 1944 is relatively small. Only $28,266.51 out of a total $67,000,000 spent for rubber and leather footwear in this period went for the 8,302 pairs of field shoes and overshoes bought for women. The total number of all shoes bought for the Army's men and women since the fateful December of 1941 is 80,000,000 pairs. In addition, this Boston depot buys footwear and leather for the Lend-Lease program and is regarded as the biggest purchaser of footwear in today's market.

Breakdown on the types of women's shoes bought by the Army since war opened: low service shoes, 1,030,084 pairs; nurses' black shoes, 200,436 pairs; nurses' white shoes, 6,436 pairs; field shoes, 393,228 pairs; bedroom slippers, 5,596 pairs; nurses' shoe pacs (cold climate footwear) 2,000 pairs; artic overshoes, 1,302 pairs; nurses' artics, 45,664 pairs; nurses' field overshoes 2,000 pairs; rubber overshoes, 66,330 pairs; low overshoes, 333,724 pairs; four buckle artics, 170,523 pairs.

That "combat" boot for the girl who made a glass slipper familiar would be very similar to the combat boot developed to replace the service shoe and canvas legging combination for the fighting man. Hailed as the greatest footwear item ever produced for a soldier, the combat boot has a five inch two buckle cuff of leather and composition soles and heels. When the woman soldier wears slacks on duty, she can push them under the cuff of her boot as does her brother and slug it out in all kinds of weather and across all kinds of terrain.

###########

SURPRISE FOR THE SERGEANTS

Pleasantly astonished were one hundred sergeants and sundries making up the Non-Commissioned Officers Club at Fort Douglas, Utah, recently when they unanimously elected Corporal Clawson to be Sergeant at Arms for the ensuing year. As the new officers filed by for inspection, Corporal Clawson proved to have a first name, Nancy, to be the only woman member of the club and the photogenic original of many photographs used for Women's Army Corps recruiting.

In the club's constitution, the corporal's duties include maintaining order at meetings and social functions, examining credentials, and if the need arises, ejecting any disorderly member or guest.

IT ISN'T JUST A LOAF OF BREAD

Enshrined as carefully as a rare jewel, the crusty 11,000,000th loaf of Army bread to come from the post bakery at Camp Bowie, Texas, since its opening three years ago went on display at the installations service clubs. In compliment to the enlisted bakers whose work has made this record possible, Bakery Officer Lieutenant Edythe S. Cobbs presented the loaf as it came from the ovens to the camp commander, Colonel Alfred G. Brown, while other important post officials looked on, hungrily.

xxxxxxxxxxxx

Awards

MVR

Of interest to keep

WOMEN'S BUREAU
AUG 13 1945
DEPARTMENT OF LABOR

AWARDS TO ARMY NURSES TOTAL OVER ONE THOUSAND

Members of the Army Nurse Corps have been awarded decorations totaling one thousand and eight since 7 December 1941, the War Department announced today. By far the greater number of these have been Bronze Stars and Air Medals, a spokesman said.

The first nurses decorated were present at Pearl Harbor and in the Philippines. Awards ranged from Citations to the Legion of Merit. One Purple Heart Award was made to Captain Anne Fox. Although Captain Fox was not wounded she is one of the few people to receive the Purple Heart for meritorious service. Shortly after the award was made, this decoration was again reserved for presentation to individuals wounded as a result of enemy action.

Highest award was the Distinguished Service Medal, awarded to Colonel Florence Blanchfield, Superintendent of the Army Nurse Corps.

Two Distinguished Flying Crosses (one posthumous award to 2nd Lieut. Aleda Lutz for whom a hospital ship has been named); 4 Silver Stars for Gallantry in Action (one posthumous award); 12 Legion of Merit Awards; 433 Bronze Stars or Oak Leaf Clusters in lieu thereof; 388 Air Medals or Oak Leaf Clusters in lieu thereof; 5 Soldier's Medals and 60 Purple Hearts (15 posthumous); One hundred three unit citations or commendations have been reported to this date.

WAR DEPARTMENT
Bureau of Public Relations
PRESS BRANCH
Tel. - RE 6700
Brs. 3425 and 4860

March 17, 1945

IMMEDIATE RELEASE

MORE DIETICIANS AND THERAPISTS NEEDED IN ARMY HOSPITALS

The increased number of casualties being evacuated to this country has created acute shortages in Medical Department dieticians and occupational therapists to care for the needs of wounded men, the War Department revealed today. Casualties are being returned from overseas at a rate of 1,200 a day and today there are approximately 50,000 more sick and wounded soldiers than three months ago.

Proper, scientific feeding is an important factor in hastening the recovery of soldiers back from the battlefields, the Medical Department pointed out. In anticipation of the increased patient load, the War Department has authorized 2,000 dieticians, whose duty it is to plan menus and supervise the service of food for the sick and wounded.

Of this goal, 1,500 have received commissions and 200 more are in training, leaving a net shortage of 300. While this appears small in numbers, the Medical Department called attention to the fact that it represents more than a seventh of the total authorized strength, a shortage affecting almost every area.

For example, there are only six dietitians on duty at O'Reilly General Hospital at Springfield, Missouri, to take care of the food problems of 2,916 patients. Besides planning menus and supervising preparation, dietitians requisition all food supplies and equipment, assist in supervision of mess sanitation, maintain records and instruct special diet patients.

Qualifications for commission as a dietician include a degree from an approved college with a major in either foods and nutrition or institutional management, and completion either of a dietitian training course approved by The Surgeon General or two years of experience in a hospital approved by The Surgeon General. Some dieticians have been serving in forward hospitals near combat zones where they rough it like the soldiers, wearing trousers, leggings, shirts, and helmets, the last-named article being used for washing purposes. Others serve on hospital ships crossing the oceans.

After eight months of operation, the Army's emergency program to train civilian occupational therapists is proving successful but 100 more who are already registered are needed to fill vacancies in the hospitals, the Surgeon General's office stated.

There are now 550 women college graduates enrolled in the Army's intensive 12-month course. Of this group, 250 are in accredited occupational therapy schools taking the initial four months' instruction course. Three hundred have completed this course and are already in Army hospitals receiving their eight months on-the-job training. The final hundred applicants have been selected for enrollment, which completes the training quota.

The Surgeon General is urging both experienced graduates and recent graduates of accredited occupational therapy schools to apply in order to fill the ranks of those needed immediately to teach convalescent soldiers prescribed physical tasks that will speed their recovery.

END

DISTRIBUTION: Aa, Af, B, Da, Dd, Dm, Me, N.
10:15 A.M.

WAR DEPARTMENT
Bureau of Public Relations
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March 14, 1945

IMMEDIATE RELEASE

OFFICERS ASSIGNED TO ASSIST DISCHARGED SERVICE WOMEN

Three officers, one from the Women's Army Corps, one from the WAVES and one from the Marine Corps Women's Reserve, have been assigned as representatives of the women's services to the Veterans' Personnel Division, National Selective Service Headquarters, Washington, D. C., the War and Navy Departments announced today.

Their function will be to advise on any problems or policies arising with regard to reemployment rights, veterans' benefits or new employment for honorably discharged women veterans. One of their duties will be to acquaint civilian agencies and the women now or formerly in service with provisions of the Veterans' laws, as they apply to women, and to make informational facilities available for the returning service women (as they are to men) in each local Selective Service office.

This information service is considered particularly important, because many employers, many civilian agencies and even women themselves now or formerly in service, do not know that the "GI Bill of Rights" and all other laws pertaining to veterans of the land and naval forces apply to women in the services.

The three officers representing the women's services at National Selective Service Headquarters are:

Women's Army Corps--Major Marion Cox Lichty, 1481 Newell Street, Waterloo, Iowa, a graduate of Stephens College, Columbia, Missouri, who entered the service in July, 1942, and who comes to her new job in Washington from the headquarters of the Air Technical Service Command at Wright Field, Ohio.

United States Navy Women's Reserve (WAVES)--Lieutenant Lois Brooks Donovan, USNR, 272 South Marengo Avenue, Pasadena, California, a graduate of the University of California, formerly associated with the California State Department of Vocational Education, and formerly a supervisor for WAVE officers in the educational service program in Naval hospitals.

Marine Corps Women's Reserve--Captain Elizabeth Compton Weatherby, 86 Passaic Street, Hackensack, New Jersey, a graduate of Skidmore College, Saratoga, New York, and former personnel director for a New York hospital, who entered the service in February, 1943.

END

DISTRIBUTION: Aa, Af, B, Da, Dd, Dm, N, WAC.

1:30 P.M.

WAR DEPARTMENT
Bureau of Public Relations
PRESS BRANCH
Tel. - RE 6700
Brs. 3425 and 4860

February 1, 1945

IMMEDIATE RELEASE

WACs SEEK 8,000 RECRUITS FOR SERVICE IN HOSPITALS

The Army's recruiting campaign for personnel to form new urgently needed Women's Army Corps medical units in the general hospitals will get under way today (Thursday, February 1), the War Department announced.

Governors of the 48 States and the commissioners of the District of Columbia have pledged their assistance in the recruiting drive. They responded to an appeal from General of the Army George C. Marshall, Chief of Staff, United States Army, outlining the critical need for hospital personnel and asking for their cooperation in the recruitment campaign. The American Red Cross has also responded to a request of the War Department for assistance in this campaign.

The ultimate recruiting goal is 8,000, but a total of 6,170 women will be needed by May 1. The latter group, with a cadre or nucleus formed from Wacs already working in the hospitals or in training, will make up the 103 WAC medical units for assignment to the Army's general hospitals where the wounded are received.. The May 1 goal was set in order to have the units all trained and functioning by mid-summer. In addition to those serving in the units, Wacs will be recruited for general assignment to any of the Army's hospitals, wherever they are most needed.

As each platoon is formed, it will be sent to the WAC Training Center at Fort Oglethorpe, Georgia, to begin basic military training. Following this course and six weeks of study at an Army Medical Department enlisted technician school, the platoon will be ready for assignment to a hospital.

Hospital work will round out the training program. The Wacs will be given one month of "applicatory training," which means they will apply on the job in the afternoon what they have learned in a classroom in the morning. Upon satisfactory completion of the training courses, they will be given technician ratings.

With this system in effect, it will be possible to have the Wacs actually at work in hospitals within eleven weeks from the day they report at the Training Center. They may be assigned by platoons, without waiting for larger medical units to be formed.

It was also announced the Army would continue to recognize a certificate from a Red Cross nurses' aid training course as a substitute for the training given in the Medical Department's enlisted technician school. Holders of such certificates will be eligible for direct assignment to hospital duty after completion of WAC basic training.

Wac technicians will assist Army doctors and nurses in the care of sick and

MORE

wounded. They will perform various tasks in the wards and operating rooms, taking over many of the functions which in normal times would be handled by the nurses but for which professional training is not necessary.

However, the WAC recruitment drive is for hospital personnel to meet the need over and above any possible number of trained nurses who will be obtained through the current campaign to increase the nursing staffs of Army hospitals in this country and overseas. It was explained that enlisted technicians cannot assume the responsibilities of the professional nurse, but will assist in the numerous, important tasks which go into adequate care of injured and sick soldiers.

Wounded men are being returned to the 60 Army general hospitals in this country at the rate of more than 30,000 men a month or 1,000 men a day, it was pointed out. With battle casualties mounting, the Army's need for hospital personnel, both nurses and technician aides, is more than ever emphasized.

The Army wants trained women soldiers for the technician jobs so they may be used where the shortages are most acute, and like other military personnel, are immediately available for duty where needed. Women recruited for the WAC medical units signify their willingness to accept whatever training and assignment may be given to them, though their initial assignment will be to the particular hospital for which they enlisted.

While recruiting emphasis will be placed on the enlistment of women for the medical units during the next two months, recruitment of Wacs for other urgently needed war jobs will continue without interruptuon.

END

DISTRIBUTION: Aa, Af, B, Da, Dd, Dm, N, WAC.
10:30 A.M.

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WAR DEPARTMENT
Bureau of Public Relations
Women's Section
Army Service Forces

IMMEDIATE RELEASE

January 23, 1945

NEXT TO NOTHING IN WEIGHT BUT WARM AS TOAST

Nylon, warm, flexible, and possessed of clinging vine qualities, is being used by the Army for glove inserts to provide hand protection for more than 53 different specialist occupations in the Artic zone and mountainous regions. After removal of the normal glove, these inserts afford almost the same dexterity as bare fingers for auto mechanics, carpenters, instrument men on survey lines, and others manually engaged in cold areas.

WOMAN ARMY OFFICER PLANNING MENUS FOR EUROPEAN THEATER OF WAR

Top ranking overseas Army dietitian is a Michigan girl, Cathryn R. VerMurlen, of Grand Haven, who plans the daily menus for America's millions of fighting men in the European Theater of Operations. Only a few years ago, Captain VerMurlen, Dietitian, Army Medical Department, was a civilian making out neatly balanced ration lists for 400 persons at Hurley Hospital, Flint, Michigan, as an ambitious young graduate of Battle Creek College with a preparatory course at the University of Michigan hospital.

The finding of this dietitian in the Office of the Chief Quartermaster, subsistence division, headquarters of the European Theater illustrates another development in the utilization of women officers in the present war. Originally, these dietitian officers in the Medical Department were scheduled for hospitals. As they demonstrated their value on land and sea (hospital ships), they have been given non-hospital assignments, such as the consolidated officers' mess in London and in the Quartermaster's domain of ETO.

Captain VerMurlen has been decorated with the Bronze Star for the manner in which she has filled her station for the past year and a half. When she was promoted to a captaincy, she became the only army dietitian overseas with that rank.

Much like the housewife who plans her meals according to the market, the captain takes stock of the foodstuffs in Army warehouses all over the Continent as she prepares to build monthly menus six weeks in advance. Every item to be listed must either be in the warehouse or on the way overseas. The weather must be taken into consideration, too, heat generating foods dominating the winter fare. Once completed, the menus are sent to mess officers of every theater unit and rations are drawn by them, accordingly.

Before reporting for duty with the Quartermaster Office, Captain VerMurlen was serving as dietitian with an Army general hospital in England, having gone over with the University of Michigan hospital Group in October, 1942. She was on duty in civilian capacity then and when the Army commissioned dietitians, she became a Second Lieutenant in March 1943.

"Things were a little difficult in England" remembers Captain VerMurlen, "because we had to feed French and Moslem soldiers and Irish labor who were under our jurisdiction as well as American troops.

"None of the foreign troops care for our American dishes such as peanut butter and corn, so we had to replace them with extra rations of bread and potatoes. The Moslems would not eat pork so we had to substitute lamb in their diet."

For the men getting ready for D-Day invasion of France, the captain devised special menus, heavy with steaks, roast beef, hams and chickens. A counter part to those menus she now has in operation for troops trains carrying men to the front. Today, she plans meals for French civilians working for the United States Army and Nazi prisoners of war. The latter's menus are devised almost entirely from captured enemy foods. Her workshop is a desk in a low slung building on the outskirts of Paris.

The citation accompanying the Bronze Star award presented to Captain VerMurlen stated in part:

"As dietitian of the Office of the Chief Quartermaster, Captain VerMurlen displayed exceptional talent, foresight and ingenuity in planning and developing the current 'A' ration and special purpose menus required for this theater. In spite of temporary shortages of certain basic foodstuffs, with the complication of feeding French, Moslem, and Italian troops, Captain VerMurlen was able to keep pace with the recurring menu problems and to present workable solutions at the time they were needed.

"Her perception, industry and outstanding ability to grasp and solve these problems of above average difficulty constituted performance of duty far beyond that considered superior performance by a company grade officer".

GRANDMOTHER MOTIF WINS TOP HONORS FOR SOLDIER DECORATIONS

Strictly contrary to current rumors about the pin-up girls' citadel in the soldier heart, a protrayal of grandma, low hanging specs across her nose and a snowy wrap around atop her masculine hair cut, won first honors for Christmas decorations for the boys in Ward A-12, Station hospital, Camp Wolters, Texas.

Seated in a rocker, "grandma" was a camouflaged convalescent, as was "grandpa", also occupying a rocking chair. Grandma held in her lap, a doll, dressed as an infant. The baby and the red bricked chimney with its stockings were synthetic but the tree with its decorations was the real article.

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WAR DEPARTMENT
Bureau of Public Relations
PRESS BRANCH
TEL. - RE 6700
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January 22, 1945

IMMEDIATE RELEASE

28 WAC CHAPLAIN'S ASSISTANTS ATTEND AAF CHAPLAINS COURSE

For the first time in the history of the school, 28 members of the Women's Army Corps attended the Army Air Forces Chaplains Transition Course conducted at the San Antonio Aviation Cadet Center, San Antonio, Texas. These Wacs, all chaplain's assistants at Air Forces installations, completed their two weeks of specialized training on January 16, 1945. Two days later, 30 more Wacs arrived to attend a similar course.

The program, designed to increase their value to the service and make them more efficient in their work as assistants to AAF chaplains, was enthusiastically followed by the WAC chaplain's assistants.

"It is evident from the attention given the instructors that Wacs are taking their duties as chaplain's assistants in a most serious manner and that they are motivated by desire to render a religious service in accepting appointment as assistants to Air Force chaplains," declared Chaplain (Lieutenant Colonel) Glenn J. Witherspoon, director of the Course.

Every member of the class, which also includes enlisted men, has had experience as a chaplain's assistants, and during the 14 days of compact study, they receive training in AAF organization, war orientation, military correspondence and filing, choir direction and organization, grave registration, auto operation, practical office procedure and physical fitness.

In addition to the general conference, various religious groups conduct seminars to discuss individual problems and procedures peculiar to their particular methods of worship and record keeping.

These assistants, coming from various walks of life, have one special trait in common--an intense desire to assist in the care of the spiritual welfare of the men and women at their installations.

In the first class were former social workers, housewives, beauticians, teachers, machine operators, office workers and musicians.

The Army chaplain's assistant acts as secretary, file clerk and receptionist. She keeps records of service attendance, soldier marriages, visits to hospitals and confinement areas, for the chaplain; prepares the weekly schedule of services and chapel activities under his guidance; and prepares the necessary publicity for the services. Most assistants are also musicians, and are in charge of the choir and play the organ during services. Theirs is also the job of caring for the altar and preparing it for the particular service.

In the school at San Antonio, a choir is organized during each session in order to furnish the students with training in methods of such organization and with the direction of choirs on their own posts. For the first time, the Course had a mixed choir, which performed in an outstanding manner, according to the Course director, Chaplain Witherspoon.

Women's Army Corps members who were in the first class included:

CALIFORNIA

OCEAN PARK:	Ruth L. Whiteman, 2035 Fourth Street,
PALO ALTO:	A[illegible]va I. Peterson, 1116 California Ave.,
LOS ANGELES:	[illegible]lire Glady[illegible], [illegible] South Kenmore Ave., [illegible] Virg[illegible] [illegible]327 Angeles Vista Blvd.,

MORE

CONNECTICUT

STAMFORD: Vivian G. Sellars, 27 Broad Street,

ILLINOIS

ASSUMPTION: Dorothy M. Jones

IOWA

DES MOINES: Caroline Riddle Prugh, 3333 Grand Ave.,

MISSOURI

ST. JOSEPH: Florence Lee Maxfield, 2411 Lafayette Street,

NEBRASKA

HOLDREGE: Ann E. Holt, 514 Arthur Street,

NEW JERSEY

JERSEY CITY: Margaret Mae Zieher, 22 Zabriskie Street,
FAIR HAVEN: Ethel Gertrude Smock, 699 River Road,
PATERSON: Eleanor Gladys Stagg, 39 Matlock Street,
JERSEY CITY: Amelia Charlotte Carlsen, 311 Winfield Avenue,

NEW YORK

NEW YORK: Margaret Elizabeth Stonebridge, 2964 Barkley Avenue,
NEWBURGH: Veronica Pollock, 47 Clinton Street,

NORTH CAROLINA

BEAUFORT: Iva Paul Bailey, 117 Moore Street,

OHIO

YOUNGSTOWN: Adelene Jo Featsent, 39 Lauderdale Avenue,

OKLAHOMA

ARDMORE: Berta Lee Franklin, 402 First Avenue, SE,

PENNSYLVANIA

PITTSBURGH: Laura Mildred Eicher, 326 Natchez Street,
SCHUYLKILL HAVEN: Dorothy M. Blew, 218 North Berne Street,
SECANE: Marjorie Whitacre Alexander, Woodside Avenue,
NEW BETHLEHEM: Louise Fasenmyer Doran,
REEDSVILLE: Martha Isabel Werts, Logan Street,

TEXAS

WAXAHACHIE: Mary Esta Price, 304 Briggs Street,
ROWLETT: Edith B. Williams, Route 1,

WISCONSIN

STEVENS POINT: Lucille Elizabeth Knippel, 514 Smith Street,
FOND dU LAC: Evelyn Marie Faris, 31 Gould Street,
BERLIN: Doris Marie Jeskey, 1219 Capron Street.

END

TION: Dr

WAR DEPARTMENT
Bureau of Public Relations
Women's Section
Army Service Forces

IMMEDIATE RELEASE January 16, 1945

ARMY DIETITIAN SOLVES HER PROBLEM BY BUSINESS METHODS

American business practices used to standardize production have been scaled to suit her needs by Captain Nell Wickliffe, chief dietitian at Brooke General Hospital, Fort Sam Houston, Texas. Faced with the problem of adequately supervising food quality and service in fourteen hospital messes housed in separate buildings, this woman officer of the Army's Medical Department evolved a daily mimeographed instruction sheet and menu for each of the dietitians and mess sergeants in charge of the various messes.

The sheets carry detailed information about the ordering, preparation, final products, and service. In order to obtain uniform food products of high quality, the captain ordered the same menu used in all messes. Recipes on file in each mess are issued to the cooks and followed carefully. A constant check is made on the food preparation and every item of food is tasted before served.

"IF WISHES WERE HORSES, BEGGARS WOULD RIDE"—OLD ENGLISH PROVERB

Its an old custom of mankind since the dawn of history to do a bit of wishful thinking about mankind's prospects of the immediate future, especially at certain seasons of the year.

The stories of golden princesses with fairy godmothers and potent wishes overcoming all obstacles are witnessed by 86,000,000 Americans each week on a silver screen with just as much relish as early royal circles heard them from strolling ministrels.

Just because it is the New Year and a time for looking ahead, Mrs. Warwick B. Hobart, Adviser on the Employment of Women in the Office of Civilian Personnel and Training in the Office of the Secretary of War, was asked what she would do with five wishes for American women in industry during 1945.

"If a Potomac River pixie suddenly appeared in the Pentagon and offered to grant me five wishes during 1945 effective for women employed in United States industry, I could very readily speak up" declares Mrs. Hobart. Her job with the War Department, the world's largest single employer of women, is to strive constantly to better the working conditions for these half million women.

"Here would be my five wishes for 1945:

"(1) Every woman at work in industry would be in exactly the place for which she is best suited, physically and mentally. Her placement would have been determined by scientific selection and counselling processes so that each morning she welcomed the opportunity to turn out a full day's work at top capacity.

(2) To achieve correct placement, (the fitting of the round peg into the round hole) there would have to be equal opportunity with men employees to enter any job opening and to rise to high levels in all branches. If this wish were granted, we would hear no more that oft repeated dictum 'no woman can supervise a project'.

(3) A square deal for the professional woman in pay and opportunities. We have made some progress in getting equal pay for women wage earners who do the same machine work as do men but the woman who has devoted her post—college years to a profession is yet to be accepted on the same basis as her masculine counterpart by the finance office and conference table.

(4) All training at any level open to men shall be made available to women, on the basis of their capacity. This would mean letting down the barriers of medical and other colleges wherever any fence now exists against the admission of women.

(5) More help from the community for women carrying the dual load of home making and job holding. Women, without industrial or office jobs, through their organized groups or through local elections, could make it possible for working mothers to have better marketing opportunities, finer pre-school nurseries, and nursing aid for family illnesses, if they were determined to uphold the efforts of their sisters on the assembly lines.

"Given the granting of these five wishes, 1945 would be indeed a historic moment."

PREFABRICATED IDEA INVADES ARMY'S LITTLE THEATERS

Musical comedy complete with dialogue script, music, and orchestrations for any size group from one piano up, are now supplied overseas troops by the Army's Special Services Division to be used by military personnel for entertainment. Full instructions as to costumes and scenic designs are also included, particularly directions for using makeshift or salvage material for stage settings.

"Blueprint show" is the Army's name for these prefabricated productions. Four of them have already been made, the last one being titled "OKAY, U.S.A.". This last production is a "musical guidebook to the United States", a travesty on the various guidebooks to foreign countries distributed by the Army to troops.

Prior to sending these blueprints abroad, a test production is made in this country just as a Broadway opus is given its road trial before opening in New York. After theatrical experts in the Special Services Division have observed the test performance, the entire show is blue printed and started on its global tour.

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magazines – Whitelock

Return to Robinson

WAR DEPARTMENT
Bureau of Public Relations
Women's Section
Army Service Forces

IMMEDIATE RELEASE

12 January 1945

CIVILIAN WOMAN DEVISES SAFETY SLOGAN FOR ARMY INSTALLATION

"Only fools ignore the rules" was the bond winning slogan —first prise— in a safety motto contest held recently at Fort Warren, Wyoming, an Army Service Forces Training Center where machinery and equipment is to the fore for instruction in maintenance and repair.

Author was Mrs. Agnes L. Barbiere, of Granite City, Illinois, a civilian woman employee of the post.

NEWS WHILE ITS FRESH FOR THE FIGHTING MAN

Troops in the field have been getting religious services from altars arranged on the ever useful jeep since early in the present war. Now, many of them may get their weekly news orientations from a specially designed collapsible display board that can be fastened to a jeep, tree, or any other fixed object.

Captain Glenn Anderson, Information and Education Officer of Fort Riley, Kansas, has devised such a board capable of a 36 square feet spread, made for use under combat conditions. Weekly issued maps, current news items, and other material pertinent to the trend of the war can thus be carried to the combat soldier where he is fighting. In time, this brain-child of Captain Anderson may be regulation G. I. equipment.

WOMEN BEING TRAINED AS NEGOGIATORS AT ARMY INDUSTRIAL COLLEGE

War has opened another masculine stronghold of the Army to qualified civilian and service women. One member of the Women's Army Corps and four civilian women are now matriculated in the four weeks' War Readjustment Course given at the Army Industrial College, Washington, D. C. Present manpower shortages promise an increasing use of women trainees.

The course in the termination of contracts is an important part of the war effort. The Honorable Robert P. Patterson, Under Secretary of War, gives the welcoming address to each incoming group, impressing upon the students the importance of the work.

The Army Industrial [illegible] ded in March 1924, to train officers and the [illegible] ident [illegible] war procurement and industrial [illegible] the College was reopened demobilization matters.

The Army Service Forces, responsible for supplying fighting men with everything from bull dozers to shoe laces, was among the first agencies to have its women employees trained at the Army Industrial College. In the past, the Cleveland Ordnance District, Ohio, and the Quartermaster Depot at Jeffersonville, Indiana, have entered women students.

At present, First Lieutenant Carol Roland from the Quartermaster Depot at Boston and originally from Portland, Oregon, is attending the College. The Cleveland Ordnance District is represented by Miss Margaret Edlis, Miss Eleanor Elbert, Miss Maxine Melton and Miss Edith N. O'Connor.

These women students have varied professional and business backgrounds. They have met the scholastic requirements for the College and graduates are actively engaged in the work for which they were trained. While attending the College, they are permitted to find their own living quarters in the nation's capital. Classrooms of the College are housed in The Pentagon.

The present course terminates on January 27 and another course begins [illegible] week later. The College expects new invasions of this masculine stronghold by qualified women.

FIRST CHINESE WOMAN OFFICER IN MEDICAL DEPARTMENT WAS A CAPTAIN

Laurels for being the first Chinese woman officer in the Army's Medical Department really go to Captain Poe-Eng Yu, who entered as a physician in October, 1943. Through an inadvertent error, Lieutenant Theresa T. Woo, recently naturalized citizen now in training at Lawson General Hospital, Atlanta, Georgia, was given this credit.

Captain Poe-Eng Yu is at present on assignment at Camp Crowder, Missouri, as a psychiatrist. She served overseas six weeks in Algiers and was at one time, an Army contract physician for the Women's Army Corps First Training Center, Des Moines, Iowa. Her alma mater is University of Michigan from which she graduated in 1939 and she was a student at [illegible] Hopkins University, Baltimore, Maryland. [illegible] was born in China in [illegible]

[illegible] — Whitelock

WAR DEPARTMENT
Bureau of Public Relations
Women's Section
Army Service Forces

IMMEDIATE RELEASE January 6, 1945

TODAY'S REPLICA OF THE CIRCUIT READER

One of the nation's most unusual pastorates is that served by the jeep-riding circuit minister, Chaplain (Captain) John Baergen, of Villa Park, Illinois, who provides religious services for the German Prisoners of War in six branch camps of the Army's Fort Benning, Georgia. Under terms of the Geneva Convention, such services are part of the international prisoner of war code.

Two prisoner of war clergyman approved by their respective Lutheran and Catholic superiors and living in the Fort Benning compound with their fellow prisoners, accompany Chaplain Baergen on his weekly jeep trips through southwestern Georgia.

CONSERVATION OF STORAGE SPACE

"Designing small houses at low cost is my ambition, but drawing storage layouts on warehouse plans for the Quartermaster Corps is what I'll do for the duration", says Engineering Draftsman Sarah O'Bannon of Newark, Ohio. This sentiment is echoed by the five other women on the drafting staff of the Depot Facility Section in the Storage and Distribution Branch in that Corps.

They are making drawings for the rearrangement of supplies in Army warehouses throughout the country as a conservation measure for much needed floor space and building material for new depots. In the year ending July 1, 1944, more than 89 million square feet of storage space were released for use through these reallocations of supplies stored for future shipment to the troops. It is estimated that 120 new warehouses would have been built to provide an equivalent amount of this additional storage space.

Women were first employed on the Depot Facility Section drafting staff in 1942 to make these layouts from rough sketches and drafts prepared by field Quartermaster engineers constantly at work to utilize more efficiently the fast dwindling storage space. The women draftsmen interpret with pen and ink the Army design for reshifting of goods in order to make the best possible use of warehouse space.

To have materiel well protected and stored in convenient places makes it possible for the supplies to be shipped quickly and efficiently to the war fronts. Varieties of materiel—canned food, fresh meat, clothing and machine parts, for front lines must be stored in appropriate warehouses, heated areas, sheds, open spaces, and in other advantageous spots.

1 — Whitelock

With a women's traditional flair for shifting household goods, these draftsmen greatly relish this job of drawing storage plans for the Army's materiel. Previous work experience has fitted them for their present positions. Mrs. C. J. Crapo of Boston, Massachusetts drew designs for aircraft instruments at a large manufacturing corporation. Miss Grace Cameron of New York City who has a degree in engineering has worked as an interior decorator in New York before coming to her Washington job. Mrs. Bess Dayton of New York has had drafting experience in her home town and Miss Grace Young from Dayton, Ohio also has had experience in drafting.

Another member of this group, Miss Leila Wilburn of Atlanta, Georgia is a registered architech having almost 35 years of experience handling private residence building jobs and a mail order business. Miss O'Bannon, whose father does construction work, drew maps for the Ohio State Highway Department. Most of the draftsmen found it helpful to their Army jobs to take courses in construction and engineering at local universities.

BASIC FOREIGN PHRASES IMPORTANT MILITARY EQUIPMENT

Best results from Army instruction in foreign languages to G. I. Joe for use in the theater of war to which he is assigned have been obtained from groups of fifty or less soldiers. On board transport during off-duty time, American troops learn basic words and phrases in 6 to 8 hours of tuition from language guides and phonograph records.

SOME CHANGES AT WEST POINT STORE

Founded August 7, 1876, the store conducted by the Army for sale at cost of authorized clothing, equipment, and merchandise to the cadets at the United States Military Academy, West Point, New York, has now put its civilian employees on United States Civil Service ratings. Under the same War Department regulation, the Quartermaster General of the Army will be the purchasing agent for the store thus getting the advantage of experienced experts in that organization. These two innovations in this merchandising mart patronized by today's war front generals in their plebe days are expected to mean savings for the cadets "at the Point".

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WAR DEPARTMENT
Bureau of Public Relations
Women's Section
Army Service Forces

IMMEDIATE RELEASE JANUARY 3,1945

WOMAN PHYSICIAN IN ARMY CAME FROM LAND OF SOONG SISTERS

First Chinese woman officer in the Medical Department of the Army of the United States is Lieutenant Theresa T. Woo, member of the group of women doctors now consultants and practitioners just as are the male physicians. She was formally admitted to American citizenship recently in the United States District Court, Atlanta, Georgia, where she is getting Army orientation and training at nearby Lawson General Hospital.

As the daughter of a Chinese diplomat who has served in Washington and South America, Lieutenant Woo has been educated around the world since she was born in Peiping, China, 33 years ago. She studied at the College of the Pacific, in California, and University of Michigan Medical School, her interne service having been in Philadelphia. She returned to this country before Pearl Harbor.

The women doctors roster of the Army also carries the name of a Russian born physician. She is Captain Bronislava Z. Resnick, a native of Kiev, where she was educated. She came to the United States in the twenties and was a practicing physician in Chicago until her entrance into the Army, August 1943.

MORE THAN 21,000,000 BOOKS IN 1944 FOR OVERSEAS TROOPS

Reaching G.I. Joe and Josephine by boat, plane, parachute, and jeep, almost 75,000 free books a day went overseas during the year just closed to make troops in this war " the best read Army that ever fought a battle". Top popular titles selling for dollars in book shops of continental United States cost the Army an average of six cents a copy, 32 new titles being sent out monthly in sets for variety reading.

These paper covered expendable books as welcome as mail from home have been dropped from the air to outpost task forces on lonely Pacific islands. They have been issued in huge lots to hospitals behind combat areas. They go with the men aboard the transport.

At the rate of four or five million copies every thirty days, special editions of 28 different magazines without advertising go overseas for the combined recreational and educational pastime that is reading.

The magic of having a book to read while nooning it out after chow in the marsh mud of an island or guarding a captured plane from souvenir hunters, belongs to the Army Library Service. One of the magicians's aides is Editions for the Armed Forces, Inc., a non-profit organization established for the purpose by the Council on Books in Wartime.

This organization has a directorate of more than 20 figures prominent in the book world. An advisory committee includes authors, librarians, publishers, critics, who screen the titles submitted each month for publication. The Army makes final selection of the books to be distributed to its men and women, basing its choice on surveys made to determine soldier reading tastes.

Every soldier overseas doesn't have a book or magazine to read whenever or as often as he wants it. Exigencies of war prevent such an environment. The Army also fills requests from overseas theaters for specific lists and quantities of books, ranging from "Who's Who in America" to 2,000 volume libraries. In a foreign theater, 140,000 books were in circulation through its 1,000 field libraries, 20 post libraries and 14 hospital units, in June, 1944.

More than 10,000,000 volumes- fiction, non-fiction, and reference-- and hundreds of thousands of magazine in addition to the expendable books, fill Army libraries in this country and abroad.

WOMEN WHITE COLLAR WORKERS GO INTO SHOP FOR INVENTORY

Women office workers donned slacks and layers of warm clothing for three days to stand on ladders and sit on boxes to make an end of the year inventory of nuts, bolts, and all types of spare parts at the Army's Fort Wayne Ordnance Depot, near Detroit, Michigan. Everything stopped but the inventory that spare parts shipments to the combat areas from "the world's fastest spare parts depot" might be accurate in 1945 as well as speedy.

G.I. JOE'S MISSUS GETS ADVICE FROM NATION'S TOP EXPERT

Uncle Sam's number one authority on Emergency Maternity and Infancy Care Program. Dr. Katherine F. Lenroot, Chief of the Children's Bureau, Department of Labor, went to Columbus, Georgia, recently to speak to the Army wives in that area about the operation of the program laws. The visit included three lectures, one of which was made at nearby Fort Benning, and was a feature of the intensive instruction for the women folks of military personnel stationed in that region sponsored by Brigadier General William H. Hobson, commandant of the post.

About 9,150 Army wives in Georgia have already participated in the Emergency Maternity and Infant Care Program since its authorization by Congress.

WOMEN TIRE WORKERS ELIGIBLE FOR WAR DEPARTMENT COMMENDATION

An estimated 21 per cent of the 50,000 tire workers striving for a perfect attendance record until April 1, 1945, in five industrial areas of the nation to keep the Army on rubber, are women. Those workers qualifying at the end of the 120 day period as non-absentees will be presented with certificates of commendation from the War Department.

Women are employed particularly in the plants producing the lighter types of the needed military tires and in many branches of the preliminary processes. They are also found frequently as inspectors and the producers of the metal strips used to reinforce the tire structure.

N.Y.T 5/17/45.

Service Leaders Emphasize Need Of Job Help for Women Veterans

Training in Service Is Believed to Have Vocational Value, but Guidance Is Called Necessary in Finding Suitable Jobs

Special to THE NEW YORK TIMES.

WASHINGTON, May 16—The need for job and training help for returning service women, as well as returning service men was emphasized at an all-day discussion today by the National Federation of Business and Professional Women's Clubs.

High-ranking officers of the women's military services took part, as did representatives of the Veterans Bureau, Selective Service and the United States Employment Service.

Miss Rochelle Rodd Cachet, national chairman of Education and Vocations for the Business and Professional Women, explained that the organization's attempt to set up a nation-wide system of welcoming the returned service woman had been held up by inability to get lists of such women.

She was later informed that State Selective Service Administrators have responsibility for such lists, and their availability depends on policy and clerical help. Selective Service has also prepared, with the aid of the women's services, a manual, and is now setting up a correspondence course for local draft boards on the rights and benefits of service women as veterans.

Training in Service Cited

Col. Oveta Culp Hobby, Wac director; Comdr. Tova P. Wiley, assistant director of Waves; Col. Ruth Ceyney Streeter, director of Women Marines, and Capt. Dorothy C. Stratton, director of Spars, all contended that life and work in the armed services should add greatly to the civilian efficiency and adaptability of service women, but noted possible obstacles ahead.

Col. Hobby said the job future for demobilized service women depends in a large degree on "public sanction of a woman's right to work regardless of sex and marital status."

Representatives of the Veterans' Administration, USES and Selective Service explained that the woman veterans may secure vocational training or obtain education under the GI Bill of Rights.

Colonel Hobby said that Army responsibility ends when the Wac gets her discharge papers, and that while it might seem easy to fit, for instance, the few Wac radar and radio operaters into civilian life, "we must remember the thousands of men who have also had this training."

Difficulties Seen for Officers

Captain Stratton said she considered the post-war career of the woman officer a more difficult matter than for the enlisted woman in that she had been trained to supervise others but would have no convenient translation to show her value to future employers.

Lieut. Col. Mary G. Philips of the Army Nurse Corps pointed out that the Army's need for nurses would not end with the war. She saw the Army nurse's greatest post-war difficulty in finding the kind of job to really use her ability and training. She said there was no question of the nation's need for all its nurses and more, but added it was not known how much the nation's medical services could be expanded as a matter of cost.

M. Eunice Hilton, dean of women of Syracuse University, said little attention had been given on the college campuses to the education of the woman veteran.

Tour of Duty Has Increased GI Jane's Value to Future Employer

By Genevieve Reynolds

GI Jane is a good reemployment bet. During her tour of duty in the armed service, she has increased her education and vocational skills. Furthermore, she has developed leadership, initiative, resourcefulness, dependability and has learned to be well groomed. This is the consensus of opinion of Col. Oveta Culp Hobby, director, Wac; Col. Ruth Cheney Streeter, director, USMCR; Capt. Dorothy C. Stratton, director, USCGR, Comdr. Tova P. Wiley, assistant director, Women's Reserve, USNR.

Adding endorsement are Lieut. Col. Mary Phillips, director, Army Nurse Corps; Maj. Helen C. Burns, director of dietitians, U. S. Army; Capt. Edna Lura, assistant director, Physical Therapy Aides, AUS.

These facts were revealed at an all-day conference of postwar problems of service women yesterday by the National Federation of Business and Professional Women's Club, Inc., at Hotel Statler.

Physical education, adaption to job and improved health are a few improvements given to GI Jane by the Wac, according to Colonel Hobby.

Captain Stratton, director of the Spars, said. "Servicewomen will not be problems to their communities when the war is over. They will, in common with all human beings, have problems, one of which will be employment. Currently 83 per cent of Spars are single. It will be safe to assume practically all this unmarried group and many married ones, either will work full time or continue their education."

All heads of branches of the women's armed forces stressed the fact that GI Janes are entitled to the same benefits as discharged men veterans under the GI Bill of Rights.

When a service woman is being discharged she has an exit interview with a specially trained rehabilitation officer, who informs her on all benefits to which she is entitled under the GI Bill of Rights; also, she will give advice on employment opportunities and tell her what local authorities to contact. If the discharged woman cannot make satisfactory local adjustments, she is urged to communicate with the woman rehabilitation officer in the district where she is located.

GI Jane may obtain further guidance from the veterans' personnel division of Selective Service, according to Maj. Marion C. [illegible], of that service.

Speaking for the Veterans' Administration at the afternoon session, Dr. Marion R. Bartlett, supervisor of vocational advisement, vocational rehabilitation and education, pointed out that while the organization counseled on jobs, a lack of trained, expert counselors preclude expert advice.

Discussing the educational aspect of the picture, Dr. M. Eunice Hilton, dean and professor of education at Syracuse University, Syracuse, N. Y., likewise emphasized the lack of trained counselors in colleges. She deplored the fact that too little publicity had been given to GI Jane's educational problems.

Richard D. Fletcher, associate director, bureau of placement, War Manpower Commission, told how the United States Employment Service will give assistance at hospitals, separation centers and at local offices in the home community.

Miss Rochelle Gachet, chairman of the BPWC vocational and guidance department, presided in the absence of Miss Hickey, a consultant to the United States delegation at the San Francisco Conference. She pledged the best efforts of 80,000 members of the national organization to help women veteransof the armed service solve their postwar readjustment career problems.

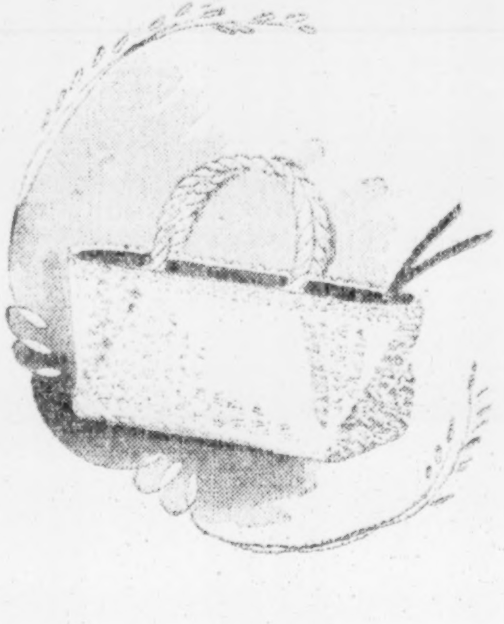
Spellbound Print

Another dazzling [illegible] print heading your way for a bright, comfortable summer. This light Spellbound fabric frock keeps you cool as ice with its bow tie neckline, cap sleeves and fly button front. Aqua, gold, contrasting print. Sizes 10 to 18. $14.95

EMBASSY Gowns

1103 Conn. Ave.

Post Want Ads Bring Results



A Josef Handbag

in white plastic . . .

Saks

810 TWELFTH STREET

Claims Power For 2 Bureaus Is Below Cost

Harold A. Brooks, vice president and commercial manager of the Potomac Electric Power Co., and William Lauk, the firm's assistant planning engineer, will take the stand today when the Public Utilities Commission resumes hearings at 10:30 a. m. on the company's proposed schedule for effecting a million-dollar reduction in its 1944 revenues.

At sessions in the District Building yesterday, William K. Laws, Pepco attorney, cross-examined David A. Kosh, chief of the Treasury Procurement Division's utilities section. Kosh has previously criticized the company's rate reduction schedule as "inequitable" to Government consumers.

After bringing out evidence that Kosh has had no previous experience in hearings on electric utility rate schedules, the Pepco attorney attempted to show that the Navy Yard and Government Printing Office were now receiving power at less than basic production costs. Although the schedule effects a $1,037,000 revenue reduction as ordered last year by the PUC, it

ecial low rates now

Berge Urges Wide, but Legal Use of Trade Associations

Wider use of the "trade association idea" by consumers was proposed by Assistant Attorney General Wendell Berge yesterday as a means of getting better products on the market to meet more discriminating buying.

Extending his warnings on the cartel threat to American enterprise, Berge asserted that trade associations, depending on their "fundamental attitude," can be a menace or asset to efficient industrial operations and consumers' interests.

He cautioned executives of the Washington Trade Association, before whom he spoke on "Trade Associations and the Antitrust Laws," that the Government will "vigorously" invoke its legal powers against trade groups "set upon a course destructive of real competition."

Up to Business Men

But, in his opinion, he added, it is the businessmen in such trade associations who by their policies will determine whether their practices are "likely to be far out of line with the law."

Opposed to the "beneficial" influence consumers' trade associations can exert, the Justice Department official cited "a few recent

tions which had agreed on price-fixing and elimination of smaller non-member competitors through boycott of the latter and "excessive" charges for "so-called services" to them.

"Law enforcement activity and trade association activity will proceed side by side," he stated, "each functioning cooperatively as a part of American effort to keep business activity free from illegal restraints."

2 Veterans Begin

The infantry and air force are on an equal footing at the Coast-In Pontiac Co., 407 Florida ave. ne., where two young Washington veterans work side by side as apprentices in the complex study of automobile mechanics.

Clay C. Tarman, ex-infantry sergeant, and James Alexander Gibbs, who saw eight years as an Army flier before he was injured and discharged, both decided that the automotive industry is a good postwar bet and signed up for a

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Career Adjustment Plans Will Be Discussed Here

By Genevieve Reynolds

Club Notes

What are the career adjustment problems confronting servicewomen after the war? What activity is being carried on within the services to prepare them for postwar training and placement? How can the National Federation of Business and Professional Women's Clubs, with its 90,000 members, most effectively build the fullest cooperation between the services training agencies and the community?

To find the answer to these and other puzzlers, Miss Margaret A. Hickey, national federation president, who is also chairman of the women's advisory committee, War Manpower Commission and a member of the new Citizens' Federal Commmittee on Education, has called a conference of heads of women's service organizations. The all day conclave will be held here May 16, at the Statler Hotel.

Service Heads to Attend

Heads of the women's services who will attend are Capt. Mildred H. McAfee, Waves; Col. Oveta Culp Hobby, Wacs; Capt. Dorôthy C. Streeter, Marines; Captain Dorothy C. Stratton, Spars; Capt. Sue Dauser, Navy Nurse Corps; Col. Florence Blanchfield, Army Nurse Corps;; Maj. Helen C. Burns, director of dietitians, and Maj. Emma Vogel, physical therapy aides department.

Guest speakers will be Miss M. Eunice Hilton, dean of women, Syracuse University; Brig. Gen. Frank Hines of the Veterans' Administration, and Mrs. Marguerite Wyckiff Zapoleon, Women's Bureau, Department of Labor.

Representatives of the NFBPW expected to be present, in additi to Miss Hickey, are Mrs. Ellen Woodward, member of the nation Social Security Board, who also the federation's national chairma of public affairs; Miss Rochell Rodd Gachet, Montevallo, Ala., na tional federation chairman of the education and vocations committee.

State Panel Discussion

The District's Business and Professional Women's Clubs has slated a panel discussion of "D. C. Hospitals and Medical Services" today at 8 p. m. at Pierce Hall, 15th and Harvard sts. nw. This is the third in a series of five weekly panel discussions on District civic problems.

Judge Lucy S. Howorth, office of the solicitor, Veterans' Administration, will act as moderator. Supporting speakers will be Miss Dorothy La Falle, chief, Physical Fitness Division, Federal Security Administration; Miss Gertrude Bolling, member, D. C. Health Council and chairman Procurement and Assignment Services, District Nurses Association; Dr. Melvin P. Isaminger, director, D. C. Bureau of Health Instruction.

Miss Susie V. Watwood is chairman of the club's legislation committee.

Bits of This and That . . .

The Ladies Auxiliary, **Hebrew Home for the Aged,** held its annual benefit card party and bazaar Monday night. Proceeds go to the organization's nursing fund. Mrs. Irving Rappaport was chairman of the event . . . Any old buttons today, lady? The British War Relief Shop at 1767 Columbia rd. nw. wants buttons of all sizes. While there's a big shortage of needles, thread, brushes and combs in Great Britain, buttons are even more scarce. Prof. Clyde Kluckholm, anthropologist and ornithologist of Harvard University, will give an illustrated lecture on "Navajo Indian Arts" following the **Washington Arts Club's** dinner meeting tomorrow at 7 p. m. Mr. and Mrs. Lloyd G. Henbest are hosts.

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t 'Oldest Inhabitant' Birthday Today

Indictment Of Medley Is Upheld

District Court Justice T. Alan Goldsborough overruled yesterday the demurrer attacking the indictment against Joseph D. Medley, 44, charged with the murder of Mrs. Nancy Boyer, which claimed that the grand jury was improperly selected.

The judge took under advisement, however, a motion to strike the defendant's six aliases appearing in the true bill on grounds it would prejudice the minds of the trial jurors. Assistant U. S. Attorney John W. Fihelly said he was studying cases at law to determine if granting of the motion would necessitate presenting the case anew to the grand jury.

Fihelly indicated that as soon as the motion was disposed of, a trial date would be set, and said he "hoped" to try Medley sometime this month.

Government counsel agreed to give Defense Attorney James K. Hughes the right to inspect various pieces of evidence retained by police, including the gun and bullets in the case.

Hughes had asked that the indictment be set aside on a claim that the grand jury was selected from a telephone directory and that it did not represent a cross-section of District residents in respect to religious, economic and social position.

He said the grand jury also was prejudiced by making a visit it made to the District jail where it viewed Medley. The defendant is charged with fatally shooting Mrs. Boyer on March 6 in her 16th st. apartment.

5 Service Sons Save Woman's Citizenship

A mother of five sons in the armed forces, Mrs Angelina M. Ombres, 50, 3918 5th st. nw., yesterday became a naturalized citizen in District Court.

"This is my country," she said joyfully after taking the oath before Justice Matthew F. McGuire.

The judge had denied her citizenship last month after naturalization officials said she had made an erroneous statement on her application, concerning a second marriage. The judge reconsidered after learning she had five sons in service, and said he believed she had not intended to commit perjury.

Mrs. Ombres is a native of Italy and came to this country 31 years ago.

Twenty-seven nationalities were represented at the ceremonies. The new citizens were addressed by Lee R. Pennington, department commander of the American

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of ships not previously
as having been in action.

The report does give the first integrated official picture of the war in the Pacific from the attack on Pearl Harbor by the Japanese on Dec. 7, 1941, through the early spring raids this year on Truk and the Marianas.

Four Phases in the Pacific

The Pacific campaign Admiral King divides into four great phases: the purely defensive, the defensive-offensive, the offensive-defensive and the purely offensive, which is its present status. The defensive phase, said the Commander-in Chief, began with Pearl Harbor and ended with the Battle of the Coral Sea the following May when the Lexington-Yorktown task force turned back the two-headed Japanese drive at Port Moresby and New Caledonia.

Included in this summary is the gallant story of the little Asiatic Squadron of one heavy cruiser, the Houston; the two light cruisers, Marblehead and Boise, which were soon out of action; thirteen overage destroyers of World War I vintage, twenty-nine submarines and the lumbering Catalina patrol bombers of Patrol Wing 10. In less than three months all the surface vessels were lost except the Boise and Marblehead and four destroyers. Most of the Catalinas also were shot down.

Even in this phase, the fleet units in the Central Pacific were on the offensive with the Halsey-led raids on the Marshalls and Gilberts, the Wake-Marcus raid of February-March and the Doolittle bombing of Tokyo. The Admiral puts them in their proper perspective as "successful though inconclusive" and points out that the chief value of the daring Doolittle-led raid of sixteen medium bombers on Tokyo was more a stimulus to American morale than it was damaging to the enemy.

The Battle of Midway, where four Japanese carriers were sunk, was the defensive-offensive phase of the Pacific campaign, he said, and tended to restore the balance of naval power in the Pacific. He pointed out, it was the first decisive defeat of the Japanese at sea in 450 years, since the Korean Admiral Yi-sun defeated the forces of Admiral Hideyoshi, so-called father of the Japanese Navy, off the Korean Coast in 1592.

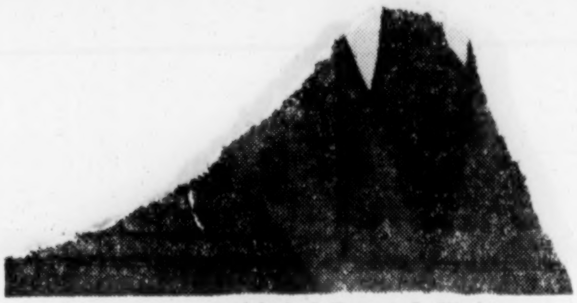
Offensive-Defensive Phase

The offensive-defensive phase began with the landings on Guadalcanal, Aug. 7, 1942. He gives it that title, he explains, because, al-

immediate cause of the defeat, was the result of a combination of circumstances," he continued. "Because of the urgency of seizing and occupying Guadalcanal, planning was not up to the usual thorough standards. Certain communication failures made a bad situation worse. Fatigue was a contributing factor in the degree of alertness maintained. Generally speaking, however, we were surprised because we lacked experience. Needless to say, the lessons learned were fully taken into account."

Many Details Still Secret

Many details of the Pacific campaigns still are left untold by the admiral's report, which is not by any means a complete history of our war there. Apparently he believes certain information is still



Admiral Ernest J. King

The New York Times

Navy Praises Women Reserv
For Raising Efficiency Stand

By KATHLEEN McLAUGHLIN

Special to The New York Times.

WASHINGTON, April 23—To each of the white-cappe Waves and Spars Admiral King's report is as personal as a pat on the back—and as gratifying. Grapevine rumors or an unstinted accolade from the Commander in Chief of the fleet percolated rapidly from rank to rank and from unit to unit preliminary to its general release today, stimulating a degree of excitement almost dumfounding to civilians and leaving beaming faces and happy smiles wherever the Navy women work. Those in the national capital went home tonight walking on air.

War Bond Sales on Ship Rise as Battle Zone Nears

Distributed by The United Press.

ABOARD A UNITED STATES CARRIER—It was too hot for a long speech. This baby flat-top had just headed for enemy waters. On the flight deck it was 101 degrees. In the engine room it was 110.

Water Tender Russell Gantz of Omaha, Neb., came to the point. It was the war bond campaign sponsored by the ship.

"Now," he said, "we're not using any pressure. It's strictly up to you."

Two divisions of this war-bound ship signed up 100 per cent for bonds in a four-day drive sandwiched between launching and landing planes, gunner drills and routine preparations for battle.

Their special pride and greatest pleasure in the message centered in a paragraph that will probably become historic in Waves annals, compressing as it does into a f sentences the tribute of an official they practically revere to a good job well done.

"The organization has been success from the beginning," Admiral King says, "partly becaus of the high standards Waves ha to meet to be accepted, partly because no effort has been spared to see that they are properly looked out for and partly because of their overpowering desire to make good."

"As a result of their competence their hard work and their enthusiasm, the release of men for se duty has been accompanied many cases, particularly in offices by increases in efficiency. The natural consequence is an esprit d corps which enhances their valu to the Navy, and it is a pleasure report that, in addition to the having earned an excellent rep tation as a part of the Navy, the have become an inspiration to in naval uniform."

What he has to say about Waves as the largest of the fe nine organizations in the Na Admiral King makes clear, app equally to the Spars and to Marine Corps Women's Reserve.

Although initial plans for Women's Reserve of the N

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though the Allies were on the attack, "we still had to use a large part of our forces to defend our recent gains."

The purely offensive phase began after the securing of Guadalcanal and "when our advance bases were no longer seriously threatened and we became able to attack the enemy at places of our own choosing." In this phase were the additional campaigns in the Solomons, for Munda, Vila, Vella Lavella, Choiseul, Bougainville and the Green Islands, the successful attacks on Makin and Tarawa, the seizure of Kwajalein and Eniwetok and the daring carrier raids into the second defense line of the Japanese.

The major part of the report on the Pacific is given to the defensive-offensive operations at sea in the Guadalcanal campaign. Each of the seven great surface and air battles of that five-months' period are given in considerable detail.

In his story of the First Battle of Savo he details the activities of the first two days, including the beating off of frequent air attacks, and up to midnight of Aug. 8, when a Japanese force of cruisers and destroyers entered Savo Sound, or "Iron Bottom Bay" as it is known in the Navy, and attacked the two screening groups of Australian and United States cruisers and destroyers that were patrolling the passages on each side of Savo Island.

Explains the Surprise

Attacking with torpedoes and gunfire, the enemy vessels quickly put out of action the American heavy cruisers Vincennes, Quincy and Astoria and the Australian heavy cruiser Canberra and damaged the American heavy cruiser Chicago and the destroyers Ralph Talbot and Patterson. The Vincennes, Quincy, Astoria and Canberra later sank. There was, the admiral said, "little effective return fire" from the surprised American-Australian force.

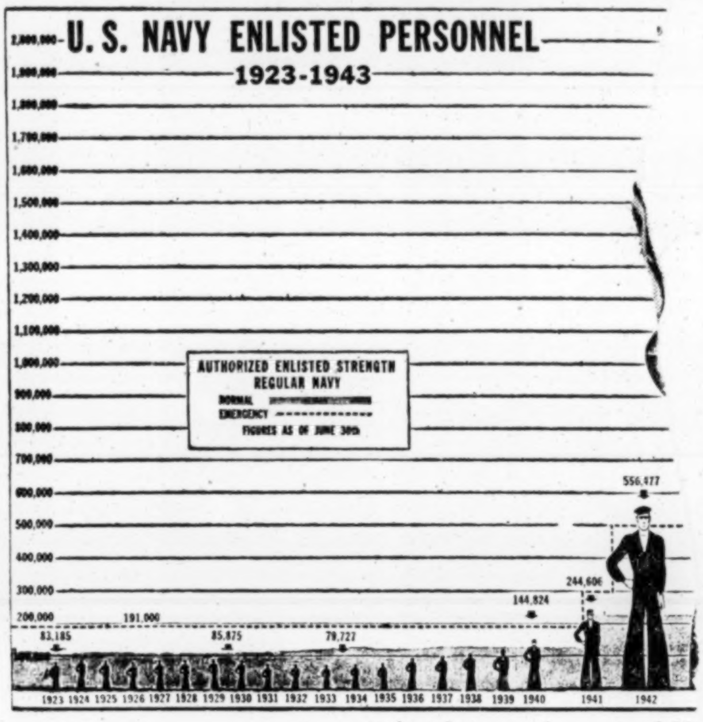
[illegible] is still unknown to the enemy and of some value to them. There also are considerable errata, in one notable case of ship identification and in the Aleutians report he confused Maj. Gen. Alfred F. Brown with Maj. Gen. William O. Butler and identified the former as commanding officer of the Fifth Army Air Force instead of the latter.

The report, an unprecedented one for the Navy, is remarkably frank, however, in most details, and gives a comprehensive picture of the Pacific sea campaign, probably the least publicized and most interesting to the American public of any phase of America's war effort.

called for only 1,000 officers
10,000 enlisted women, the rep
states, on Dec. 31, 1943, there w
6,459 commissioned Waves and
391 enlisted women serving in
rious capacities. Present plans
added, call for nearly 100,
Waves by the end of this year.

Authorized strength of the
rine Corps Women's Reserve at
time of its organization in Nov
ber of 1942 was 1,000 officers
18,000 enlisted women, accor
to the report. By Dec. 31 of
year it had reached a total of
officers and 12,592 enlisted
sonnel, all of whom, Admiral
emphasized, have released
marines for service in co
areas.

THE ADVANCE IN OUR NAV



MOBILIZATION POLICIES - 1941

I WANT A WAR JOB!

Shall I Be a . . **WELDER**
BUS DRIVER
TEACHER
NURSE
TYPIST
WAAC
WAVE

Look Inside for answers to your questions

UNITED STATES EMPLOYMENT SERVICE
of the
WAR MANPOWER COMMISSION

America at war needs women at work

In 1943 America will have to produce more war materials than any country has ever been called upon to produce in the history of the world.

To win the war, we must meet these tremendous production quotas, we must release able-bodied men for fighting and for heavy industrial jobs. This cannot be done unless nearly 18,000,000 women are backing them up in war plants and in every sort of civilian job. This means about 2,000,000 *more* women working than worked in 1942. Every skill must be put to patriotic use immediately to help save *lives.*

This does not mean that every city in the United States needs women aircraft workers or machinists or welders or taxi drivers . . . manpower shortages are confined to the industrial centers and many farms at present. BUT in almost every community in the land, women will be needed for necessary community services—paid and unpaid.

American women stand on the threshold of complete war participation, prepared to do *two* war jobs—running their homes, and taking on the job a man had to leave behind.

If you live on a farm, STAY THERE . . . the war crops must keep coming! If you live in a town or a city, look for *your* kind of war job in the following pages.

The more women at work—the sooner we'll win the war!

All these are war jobs!

1. War Production Work:

These war jobs are for women, 18 years old or more, and preferably having no children under 14 years of age.

2. Other Essential Production Work:

Such as agricultural production, packing and canning food, making clothes, uniforms, hospital supplies. Such jobs, and many others, exist in thousands of communities.

3. Necessary Civilian Service Work:

Such as driving street cars, buses, taxis; telephone operating; working in grocery and other necessary stores, hospitals, laundries, hotels, restaurants, banks—in fact, doing any job which will let a man fight or go into heavier industrial work.

4. Government:

Typists, stenographers, file clerks, supervisors in Federal, State, and local government agencies.

5. The Professions:

Nurses, teachers, social workers, laboratory assistants, scientists, engineers.

6. Community Work:

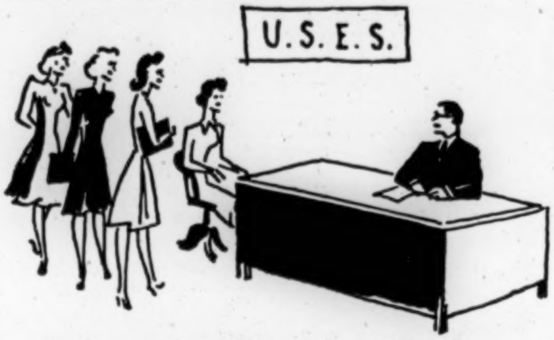
These jobs are sometimes open to those whose family responsibilities will permit them to take only part-time work; work in child care centers, hospitals and clinics, and recreation centers.

The most valuable and cooperative thing you could do would be to take *whatever* job was open in your own community. If no jobs at all are open at the moment, register anyway at the United States Employment Service office, and take a volunteer job while you wait.

7. Military Service:

WAACS, WIRES, WAVES, MARINES, SPARS, WAFS.

How to get a war production job



Go to your local United States Employment Service office. Tell them what you can do. They will tell you what jobs are open locally, tell you about training for a job, or suggest the place to go for more information.

***War Industries.*—There may not always be a war factory job ready just when you want it. If, when you apply at the United States Employment Service office, they have all the workers they need for that month—or for 2 or 3 months—spend the time you wait in TRAINING for a war job.**

If there are unlikely to be any openings at all in war plants, *don't* move to another town where workers are needed without first consulting the United States Employment Service office.

Consider taking training

If there are no jobs ready to be filled immediately, prepare yourself for the time when you will be needed.

Inquire at Your United States Employment Service Office About Free Training Courses Given in Local Public Vocational Schools and Engineering Science and Management War Training Courses Given in Other Schools and Colleges.

Many industries train workers on the job . . . BUT the candidate WITH the skills to offer is one step ahead of the novice.

Necessary civilian services

Will Need "2 out of 3"

Paul V. McNutt, Chairman of the War Manpower Commission, has stated that "2 out of every 3 of our 18,000,000 women workers will be in necessary *civilian* jobs."

Our communities must *not* be completely upset; business *must* proceed as normally as possible under wartime conditions. For this reason, it is absolutely necessary that women replace men wherever possible in these war jobs.

Women Can Do These Jobs:

Find out local needs from the United States Employment Service office. Full time workers are preferred, but in some cases part-time work will be considered.

1. Transportation:

Railroad.—Passenger and freight traffic agents, ticket agents, station agents, timekeepers, accountants, cashiers, cleaning, and repair crews.

Airways.—Stewardesses, ticket agents, secretaries, clerks, public information officials, and meteorologists.

Motor Highways.—Drivers of trucks and buses, gas station attendants, repair crews. (For example, women have been used in conveying jeeps and ambulances from factories to embarkation points.)

2. Sales, Clerical, Stenographic:

In department stores, grocery stores, drug stores. Utility companies and war plants need large office staffs in addition to machine shop workers. Jobs may be open, too, for elevator operators, messengers, file clerks.

3. Other Vital Civilian Services:

People must be housed, fed, clothed. Their clothes must be laundered and dry cleaned. Mail must be circulated and property protected.

Calling for . . . 76,000 graduate nurses, 65,000 new student nurses, 75,000 teachers

We can't fight a war without nurses—both at home and overseas.

We can't train children for a *peaceful*, better world without teachers.

These are two of the most important war jobs there are! Any woman who has ever been a nurse or a teacher should consider it her duty to report immediately for work.

Nurses should ask at the local hospital or write to the State or Local Council for War Service or the National Nursing Council for War Service, 1790 Broadway, New York City.

Teachers should ask their local Superintendents of Schools where they can best fit in or write to the State Department of Education.

Help is needed . . . child care, social work, recreation

Child Care.—There's a tremendous need for trained workers in the cities where there are war factories, and where the children of working mothers must be fed and cared for.

If there is no community day-care committee of your Defense Council in your community which is providing for the care of small children and for the supervision of older children after school hours, consult your local welfare agencies or schools, to see if you can help in planning and providing ways and means to take care of the situation.

Social Work.—War brings many social problems to almost every community—especially those where there are overcrowded conditions.

Women who have had experience or training in this field should go to their local Welfare Boards for information.

The Red Cross is recruiting personnel for service with the task forces; in military hospitals as well as in the Home Service.

Recreation: Activities including entertaining, dramatics, music, crafts are being set up by the Red Cross, the U. S. O., the Y. W. C. A., and Y. M. C. A.—in industrial plants, hospitals, and for service to the Army and Navy overseas.

Librarians, camp hostesses, directors of Service Clubs are wanted by the Army to serve staff hospitals and leave areas overseas.

Ask at local Y. W. C. A., Red Cross, and U. S. O.

These are some of the present shortages which women must wipe out

Teachers	**75,000**
Graduate Nurses	**76,000**
New Student Nurses	**65,000**
Transportation	**180,000**

Some skills and experiences especially useful now

Accounting and Bookkeeping.
Aeronautics.
Agriculture: Dairy, poultry, truck.
Arithmetic and Mathematics.*
Administration.
Arts and crafts; drafting; map making.
Clerical: Typing, stenography, filing.
Coding and decoding.
Economics.*
Food processing: Dried fruits and vegetables, mill products.
History,* political science.*
Home economics: Food, institutional management, textiles.
Library work.
Mechanical: For workshop and repair crews.
Medical*; dental*; nursing; pharmaceutical.
Occupational therapy.
Personnel work.
Physical education.
Printing.
Psychology; psychiatry.
Sciences (physics, chemistry, engineering).*
Sewing; crocheting; knitting.
Social work; child specialists; recreation.
Statistics.*
Teaching (especially nursery schools, mathematics, and science).
Telephone, telegraph, teletype.

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*If you have any training or experience in the subjects starred, write to the National Roster, Washington, D. C., for questionnaire and check list in your field of specialization.

Many opportunities in Government jobs

In local offices of Federal agencies; in State, County, and Municipal Government.

The immediate demand is for typists, stenographers, supervisors.

Information may be obtained through your local United States Employment Service office.

Don't forget the volunteer services*

Office of Civilian Defense.—The Citizens' Defense Corps requires volunteer drivers, messengers, air-raid wardens, aircraft spotters, canteen and housing service workers, as well as physicians, nurses, and other trained personnel as teachers.

The Citizens Service Corps (O. C. D.) needs volunteers to sell war stamps and bonds, conduct salvage campaigns, help with child care, hospital services, nutrition services, and many other community activities.

Red Cross.—Nurses' Aides are desperately needed for hospital duty. Every woman who does this work is giving her country and her community outstanding service.

Eighty hours of training are required. Must serve at least 150 hours a year. Nurses' Aides are needed in Army and civilian hospitals. They are not sent out of town.

Volunteers are needed for motor transport, hospital and recreation (Gray Ladies), home services, and staff assistance.

U. S. O. volunteers help to entertain men in the armed services, organize activities for women war workers, etc. Apply at your local U. S. O. headquarters.

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*NOTE.—Not all of the above-mentioned *relief* services are represented in every city.

How to enlist in the armed forces

(United States Citizens Only)

U. S. Army

WAAC

Qualifications: Age, 18 to 44; height, 5 to 6 feet; weight, 100 pounds or over; married or unmarried; no children under 14. Must pass intelligence and physical tests and be willing to go wherever the Army goes.

Ask at any post office or Army headquarters for address of nearest WAAC recruiting center.

U. S. Signal Corps

WIRES (WAAC Reserve)

Qualifications: Same as for WAAC, plus special tests and examinations.

U. S. Navy

WAVES, SPARS, MARINE Reserve

Qualifications: *Enlisted* WAVES and SPARS: High school or business school diploma, or business school courses supplemented by experience equal to a high-school education. Age, 20 to 36 years.

Officers must be college or university graduates, or have had 2 years' administrative or technical experience in business or professional fields in addition to 2 years' college. Age, 20 to 50 years.

Must pass physical and aptitude tests. No children under 18 years of age.

Apply in writing, stating all qualifications, to the Director of the Office of Naval Procurement nearest you. Ask your post office for address.

Aviation

WAFS (Auxiliary Unit for Patrol and Transport Flying)

Qualifications: Age, 21 to 35; high-school education, *commercial pilot's license*, 200-horsepower rating, at least 500 hours of logged and certified time and cross-country flying experience.

Apply in writing to Second Ferrying Group, Ferrying Division, Air Transport Command, Newcastle Army Air Base, Wilmington, Del.

The More Women at Work
The Sooner We'll Win The War!

U. S. GOVERNMENT PRINTING OFFICE 16—33757-1

Encl

November 26, 1941

Miss Laura Smith
American Telephone & Telegraph Co.
195 Broadway
New York City.

My dear Miss Smith:

In response to your telephone call, I am sending you our general observations in answer to your questions, with whatever specific information we were able to get together on short notice. I am putting down your comments as I got them over the telephone:

1. Far more women are now holding real executive jobs -

As to private industry, we can give you general impressions from our survey of office workers made in 1940 as compared to the survey we made in 1931. (There is no other survey we have made in recent years where data on women in supervisory and executive positions are obtainable.) Offhand, we would say that women in administrative positions have not increased their proportions materially over this period. (Numbers of women in such positions may have increased some.) Again, very few women were noticed in administrative personnel jobs in the larger offices (such as insurance companies) or in manufacturing plants having large numbers of women employed. I wish to call your attention to the enclosed pamphlet containing basic tables from our office workers survey; this has not been released, so we request you not to give it publicity.

As to government service (Federal only), as of Dec. 31, 1938, 14.8 percent of all persons in the occupational group classified as "managerial and administrative" were women - but for the Federal service as a whole, women constituted 18 percent of the total employees.

Between 1925 and 1941 the number of women reported in the Official Register as holding supervisory positions had trebled, but the number of women in these positions was 10 per 10,000 women employed (the same in both years). In 1925 women formed 2.4 percent of all persons for whom such salary information was reported; in 1941 their proportion was 3.5. Taking the group earning $5,000 and over in supervisory positions, only 17 percent of all women listed in 1925, as compared to almost 29 percent in 1941, earned this much. The great increase in numbers and proportion of women earning $5,000 and over was still insufficient to make much change in the proportion women constituted of this group as a whole, since the number and proportion of men at this level also increased considerably.

You are probably acquainted with our bulletin on economic status of university women, enclosed, which gives none too bright a picture. This study was made by the A.A.U.W. and the report published by the Women's Bureau.

2. More women are being paid according to the job done rather than because of sex.

This is true in general only if minimum rates or piece rates are being discussed. For instance, the Federal wage-hour law governing minimum wage rates of employees in establishments doing interstate business sets the same minimum rate for both men and women. In the Federal government service, the entrance salary for the same classification of jobs is the same for men and women.

Many trade union agreements set minimum hourly rates according to the occupation (e.g., clothing industries). An agreement made last summer by a steel company with the union provided that women receive the same minimum rate as the men (this steel company employs about half of the estimated 5,000 women in steel).

On the other hand, often the union contracts set lower rates for women than for men (as much as a 10-cent differential sometimes). Where increases have been granted due to union negotiation, the increase sometimes is less for women than for men.

Taking our office workers survey of 1940 again, we find there is a definite, different wage structure for women from that for men. Further, men's earnings increased greater proportionately than did women's when we studied a group employed more than 10 years.

3. There are more married women working now than ever before.

While the 1940 census tabulations are not yet ready that would show this situation compared to 1930, we feel that there certainly are more married women in the labor market today than ever before, and we feel sure the proportion of married women who are gainfully employed is greater today, as is the proportion of working women who are married.

The only illustrations we have comes from newspaper clippings noting a change in policy on the part of some employers toward employing married women. In Connecticut (Hartford and Torrington), in Michigan (Battle Creek), in Missouri (Springfield), and in Virginia (town not given), employers with defense contracts have been calling in one-time women employees who left to get married and have been housewives since, and news items also state that employers who formerly had refused to hire married women had lifted this ban, in some cases, applying to office as well as factory jobs.

4. More women are regarding their jobs as careers and remaining in them; they have a desire for better training and an ambition to get ahead, with greater interest in the pay envelope (getting better pay); and thus greater job stability results.

This is probably true; all general observations we might express would lead to this conclusion, but I think we would stress the unforgettable experience of the depression years as a significant factor in women holding on to their jobs even when the family situation grew better; this was probably due to a feeling of insecurity engendered and a fear that some similar

/by the depression

crisis might develop in the future. This factor has been a contributing force in the decisions made by young girls entering the labor market who keep their jobs after marriage; it has influenced women keeping their hold on jobs when fathers or brothers again are able to assume financial responsibility for family support. And of course it plays a large part in the picture of the married woman staying on the job. Even with the defense boom now on, with high wages being negotiated from day to day, the rising cost of living offsets the feeling of security that might ordinarily come from a bigger pay check, and women's interest in job-getting and job-keeping is probably keener than ever. There are still many unemployed women in this country.

Another current factor for many women needing and holding jobs even more definitely than several years ago is the Selective Service system.

In our office workers survey last year, we found a larger proportion of women had worked more than 10 years with the same firm than had men in those same firms. This may be partly explained by men being more independent about leaving a job to find a better one, but it is interesting as showing stability of women employees.

I am sending our bulletin covering the survey we made in Cleveland in 1939 of families having a woman member gainfully employed as I think you will find some very interesting material here along several lines.

Sincerely yours,

Mary V. Robinson, Director,
Division of Public Information.

P.S. Other source material on professional women might reveal some interesting trends as to women's advancement, but we are sorry not to have had time to do any such research work. We have been able to pick up only data that were readily available.

LABOR FORCE UNDER DEFENSE

(Taken from The Conference Board Economic Record, November 25, 1941, pp 499-502)

Revised estimates of the labor force as computed by The Conference Board from long-term population and occupational trends place the number of those employed or seeking gainful employment currently at about 55 million, roughly 400,000 more than a year ago. Another series of estimates prepared by the Works Projects Administration from sample field studies, places the labor force at 56.3 million in September, as against 55.8 million a year ago. There is no greater growth in the WPA series than in The Conference Board estimates, although WPA devised a sampling technique to pick up seasonal and short-term changes not reflected in the long-term series.

Specifically, the WPA labor force total for October excluding military personnel is no more than 53.5 million compared with 54.8 million in October, 1940.

Total non-military employment in September, 1941, is estimated by The Conference Board at 52.6 million, or about 4¼ million above that of a year ago. Roughly 3 million to 3.5 million workers have been added in defense industries, an additional million in non-defense industries, and about 1.4 million men to the armed forces.

Displacement or dislocations caused by priorities did not prevent net gains in the employment totals for August and September as compiled from employment records by the Board and by the United States Bureau of Labor Statistics. Employment as determined by the WPA from sample field studies, however, turned sharply downward in September and October. This was attributed in good part to losses of jobs caused by shortages of materials. 1/

1/ The reversal of trend over the past two months in the WPA figures for employment is the first occasion when a significant difference has developed between the results from sampling technique and direct reports by employers. The extreme localization of priorities unemployment may make the field studies more sensitive, if some of the sample cells under survey are located in the areas where material shortages have contributed to relatively high employment dislocations, as in Michigan. Should the number of such areas be disproportionate, however, the sample studies would be giving too great weight to such dislocations.

A striking illustration of the demands that may be made upon the labor reservoir is offered by the National Resources Planning Board.

Based upon the present Army-Navy program, an expanded lend-lease program, and assuming no active belligerency, the illustrative employment trends for the next three years are (in millions):

Employment Status	1942	1943	1944
Military service	2.5	3.0	3.5
Defense industries	11.7	15.5	23.5
Civilian industries	41.2	39.9	33.0
Total employed	55.4	58.4	60.0
Total possible workers	57.5	58.5	60.0

LABOR FORCE AND LABOR POTENTIAL

Many economists and students of America's labor resources are of the opinion that full employment or the reduction of unemployment to its "hard core" minimum lies many months ahead, possibly not before 1944. They cite as evidence not only the estimates of workers who will be displaced by priorities and allocations, but the million persons who are now on WPA projects and the additional 1.2 million workers eligible for WPA but not so employed because of lack of funds. They also cite the more than 4.5 million workers remaining on the active files of the United States Employment Service.

SUPPORTING DATA

1. The most marked long-term trend of the labor force is its steadily declining rate of growth. Between 1870 and 1880 the number of gainful workers increased from approximately 12.9 million to 17.4 million, a rise of 35 percent. Between 1880 and 1890, the labor force increased by 31 percent. Thereafter, in each succeeding decade, the rate of growth diminished, and by 1940 the decennial increase was only 8 percent.

This diminution was caused partly by the gradual decrease in the rate of population increase. Since 1910, however, the ratio of gainful workers to population of working age has steadily decreased. The total labor force in 1910 was 53.3 percent of the population 10 years of age and over. [2]

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[2] The labor force reported by the Census of 1910 was probably unduly large in relation to other Census tabulations, since in that year there was a general misunderstanding of the instructions to enumerators. Many women in rural areas were counted as unpaid farm workers while in other years they were returned as not in the labor force. Census authorities suggest that a figure for 1910 roughly comparable with other years is 52.7 percent for the ratio of labor force to population 10 years old and over. United States Bureau of the Census, "Thirteenth Census of the United States," Vol. IV, "Population," 1910, pp. 26-27.

Between 1880 and 1910 the Census reports that the ratio of labor force to population 10 years of age and over increased from 47.3 percent to 53.3 percent (or 52.7 percent after adjustment for over-enumeration) in 1910.

In the next decade it declined to 50.3 percent, and in 1940 to only 47.9 percent. To some extent this decline represented a gradual reduction in the number of child laborers, but the ratio of gainful workers to population 14 years old and over also shows a substantial decline, from 57.7 percent in 1910 to 52.3 percent in 1940.

2. The labor force would have totaled 54.8 million in 1940 had the age-sex-occupation proportions prevailing in 1930 been maintained. Of these, 42.8 million would have been men, and 12.1 million women The 1940 Census, however, showed 52.8 million persons in the labor force, 40.0 million men, 12.8 million women. The difference in the totals indicated by these figures is about two million. Possible adjustments may reduce the net change to as little as 600,000.

3. A persistent shift in sex composition over the past 60 years has increased the proportion of women to men among gainful workers. The ratio of female gainful workers to total female population 10 years of age and over has increased steadily since 1880. In that year, 14.7 percent of the female population of working age was included in the labor force. By 1900, the ratio had risen to 18.8 percent and by 1910 to 23.4 percent. The 1910 percentage reflects a substantial over-enumeration and cannot be considered comparable with the rest of the series. The percentage in 1920 was below that of 1910, but in 1930 it again rose. In 1940, 23.4 percent of the female population 10 years old and over was in the labor force and 25.5 percent of those 14 years old and above.

Most of the increase in female gainful workers was confined to the medium age groups, particularly the 20-24 and 25-44 classes. Female gainful workers under 20 decreased steadily, and the 65-and-over class remained relatively stable until the last decade, when it dropped sharply.

4. The ratio of gainful workers to population under 20 years of age has declined steadily for the past 30 years, most sharply in the last decade.

U. S. DEPARTMENT OF LABOR
WOMEN'S BUREAU
Washington

Nov. 1941
Early 1942

WOMEN IN DEFENSE EMPLOYMENT

Reports as to:

- Women Newly Employed or to be Employed
- Women Employed in Defense Work
- Women Replacing Men
- Labor Shortages Relating to Women
- Training of Women
- New or Expanded Plants that May Employ Women

(Sources indicated in footnote or after item itself.)

[illegible]

[illegible]

WOMEN NEWLY EMPLOYED OR TO BE EMPLOYED

CALIFORNIA

A San Francisco defense industry has hired about 50 women for assembly and drill press work. In nearby plants a few women are doing radio welding. (San Francisco Examiner, December 20, 1941.)

COLORADO

The Denver small-arms plant now employs 2,400, of whom 400 are women. Starting wages range from 48 to 83 cents. 1/ (p. 73)

CONNECTICUT

The Colts Firearms Manufacturing Company, Hartford, have recently employed a substantial number of women and plans call for hiring even more in the future. At present there are 200 in the fire arms division and 400 in the electrical division. (New London Day, January 10, 1942.)

ILLINOIS

A shell-loading plant at Joliet will soon employ 2,500 girls. 1/ (p. 31)

INDIANA

The bag-loading plant in Charlestown hired 1,000 women between September 1 and October 15 and still needs 2,500-3,000 more. 1/ (p. 31)

KANSAS

North American Aviation, Inc., Kansas City, expect that 40 percent of the force in the bomber plant will be women. Employment of women in the stock rooms has begun and training for skilled factory work will start immediately. Wives of men in military service will be given preference. (Washington Star, January 20, 1942.)

MARYLAND

Two Elkton explosives and fireworks firms expect to hire about 3,000 more men and women in the next few months. 1/ (p. 19)

Thousands of women will be employed by the Glenn L. Martin Company in an immediate program to speed airplane production. The additional women will be trained in the Baltimore vocational school and both the school and the women at the plant will be on a 24-hour basis. Their experience with women has been highly satisfactory. Several hundred are now working there. (Baltimore Sun, January 4, 1942 and B. American, January 4, 1942.).

1/ Labor Market Development, November 1941.

MASSACHUSETTS

In Southern Massachusetts a munitions plant expects to employ in the next 2 months, some 1,250, more than half women. 1/ (p. 10)

MISSOURI

A small-arms ammunition plant in Lakeside now employs 2,400 and expects maximum employment of 6,000 of whom 1,500 will be women. 1/ (p. 56)

NEW YORK

A spark-plug firm in Auburn has successfully experimented with women on small milling machines and plans to employ more on similar operations. 1/ (p. 21)

Bell Aircraft Corporation began December 24 to employ women on small parts assembly, machine and inspection work. Beginning with 50 or 100 they expect to employ several hundred in their Buffalo and Niagara Falls plants in the next 2 months. (Schenectady Gazette, December 23, 1941.)

TENNESSEE

Employment at Wolf Creek Ordnance will eventually equal 8,000, of whom 4,500 will be women. 1/ (p. 46) Women are being hired in Nashville airplane factories for doping, covering and handling small parts. Several hundred will be employed soon. 1/ (p. 43)

UTAH

The Ogden Ordnance Depot currently employs 900 men and 50 women and expects to hire 1,200 men and 1,000 women in next 6 months. 1/ (p. 54)

1/ Labor Market Development, November, 1941.

WOMEN ON DEFENSE JOBS

NEW JERSEY

At the Brewster Aeronautical plant at Newark Airport, the only work done by women is hand covering ailerons, cut-outs, and trailing edges with Grade A cotton fabric. One woman first did this work for Anthony Fokker in 1925. (Aviation, October, 1941, pp. 74, 140)

NEW YORK

The Bijur Lubricating Corporation, Long Island City, employs 45 women and about 100 men. Women assemble lubricating pumps and operate drill presses. Their minimum rate is 45 cents, men's 55. Most women are making about $20 a week. (Daily Worker, New York City, December 28, 1941.)

The Sperry Gyroscope Company, Brooklyn, were employing 600 women as of October 1, 1941. They use the same training technique for women as men and pay the same rate for the same job to women and men. (American Management Association, Personnel Series No. 53, pp. 24 and 25.)

WISCONSIN

Pictures of women at work in Milwaukee: One of 39 women trained as a welder in the vocational school. One operating turret lathe. One cutting sheet metal. Five inspecting artillery equipment at Briggs and Stratton Corporation. One inspecting counters to be used on ships, at Durant Manufacturing Company. (Milwaukee Journal, December 28, 1941.)

WOMEN REPLACING MEN

UNITED STATES

A survey of super markets show a marked trend toward the hiring of women as clerks and cashiers. Of those answering only 19 percent had never employed women and only 7 percent found them unsatisfactory. 66 percent were in defense areas and 72 percent were having difficulty getting workers. 80 percent were employing women. (Journal of Commerce, New York City, December 12, 1941.)

The CAA is considering the practicability of training women as radio and teletype operators to replace men who may go into the armed force. Men will continue to receive preference for these positions as long as available. (Missoula, Mont. Missoulian, December 23, 1941.)

ARIZONA

There is reported an increasing difficulty in recruiting help for restaurants and hotels. The State Employment Service is trying to get employers to relax experience requirements and to employ women. 1/ (p. 77)

CALIFORNIA

Because of shortage of men, the public employment service has been asked to prepare a list of available women for the canteens at Ft. Lewis. 1/ (p. 85)

GULF REGION (ALABAMA, LOUISIANA, MISSISSIPPI, TEXAS)

Employers are offering higher starting wages to clerical and sales workers and are willing to fill with women many openings formerly held by men, such as theater ushers and stock clerks. 1/ (pp.52-53)

LOUISIANA

A Shreveport electric motor company is using women as armature winders for the first time. (Cincinnati Post, January 1, 1942.)

MICHIGAN

State and local governments are faced with drastically changed personnel problems because of war. Among other changes, more women will be hired and possibly some positions open to them for the first time. (Detroit News, December 14, 1941.)

1/ Labor Market Development, November, 1941.

NEW JERSEY

Plants in Essex County producing war materials plan to hire women to replace men called to the service according to a survey by the State Employment Service. In Newark alone, 46 out of 160 plants plan to employ women wherever possible to replace men. Many are preparing to train them, others will rely on the State for training. The 46 plants will need about 2,800 women. Among the plants reporting, the Oiljak Manufacturing Company in Montclair could use women in assembly, on punch and drill presses, making bomb parts; the Farrand Foundry, Bloomfield, on light core making; the Newark Porcelain Enameling Company on hand brushing. Other plants not specifying jobs are: Viking Tool and Machine Company, American Can, Brewster Aeronautical Corporation, Multi-Products Company, Worthington Gamen Meter Company. (Newark Evening News, December 19, 1941.)

NEW YORK

The Astor Hotel, New York City, has hired 2 women as elevator operators to replace men called to army. (New York Times, January 7, 1942.)

Forty women are now on maintenance work at LaGuardia Field, New York City, mainly painting luminous dials and cleaning spark plugs. Plans are under way to hire girls in the passenger reservations control department and in the flight watch. One woman, hired as a secretary now directs landings and take-offs by radio. Transcontinental and Western Air, Inc., states that in its downtown traffic department 45 percent of the personnel are women, while 2 years ago only 5 women were employed. This company also employs the first woman meteorologist in its Los Angeles office and the first woman radio operator in Dayton. "We will continue to hire women in increasing numbers to replace men called to the service. Wherever necessary we will hire women even in key positions if they are properly trained and qualified. (New York Times, January 19, 1942.)

LABOR SHORTAGES RELATING TO WOMEN

UNITED STATES

The National Education Association reports a growing shortage of teachers because of better paid jobs available in industry. Enrollment in teachers' colleges and normal schools has dropped 11 percent. (News Week, December 1, 1941, p. 62.)

LOUISIANA

A Shreveport garment firm with an Army contract is having difficulty finding 100 sewing-machine operators for an additional shift. 1/ (p. 53)

MIDDLE ATLANTIC REGION (DELAWARE, DISTRICT OF COLUMBIA, MARYLAND, NEW JERSEY, NEW YORK, PENNSYLVANIA, WEST VIRGINIA)

The shortage of power sewing-machine operators is acute and regionwide. Firms are hiring learners at wages below the minimum permitted by Government regulations and training them in their own plants. In places, learners are not available because of low rates. 1/ (p. 22)

NEW JERSEY

There was a shortage of workers in woolen mills in Clifton but displaced silk workers were successfully trained and employed. 1/ (p.22)

NEW YORK

In New York City there is a shortage of woolen mill workers. Training of silk workers was not successful. 1/ (p. 22)

1/ Labor Market Development, November 1941.

TRAINING OF WOMEN

CALIFORNIA

The Pacific Aircraft Training School at Hawthorne is accepting women 21 to 40, and are to give them the same training as men. (Minneapolis Tribune, January 5, 1942.)

The increase in employment of women continues. One San Diego plant trained and placed 200 during the past 6 weeks and selected several hundred more for short public training courses. About 200 women a month are being admitted to pre-employment courses at Long Beach. 1/ (p. 80-81)

Twenty-five women having finished a 6 weeks' course are acting as inspector-supervisors in San Francisco with the Chemical Warfare Procurement Division. Each girl has 10 supervisors under her. Another class for another 25 will start January 5 with more to follow. The army will train enough young women to staff all the Western factories with chemical warfare contracts. (San Francisco News, December 29, 1941.)

A class of women welders, first ever permitted, began work in December in the San Diego Vocational School. The Solar Aircraft Company has asked that 40 women be trained for welding. The training is at Federal expense. (San Diego Union, December 9, 1941.)

A call was issued December 16 for 500 women urgently needed in the aircraft industries to replace men. The call was made through the San Diego Vocational School where free training will be given. Classes for 1,000 if applying, could be arranged for in 24 hours eventually they have been asked to train "a practically unlimited number". (San Diego Union, December 17, 1941.)

CONNECTICUT

Defense training classes for women will begin the first of 1942 in New Haven. About 25 or 30 women were trained in the summer of 1941 but classes were discontinued. (New Haven Journal-Courier, December 30, 1941.)

IOWA

About 500 girls are being trained in Iowa N.Y.A. metal and woodworking shops. They work along side boys, overhauling State automobiles, making street and road signs, steel lockers and

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1/ Labor Market Development, November 1941.

ornamental iron work for State parks. It is so far, hard for them to get jobs. One has gone to the Rock Island, Ill., army arsenal and 45 have found places in various factories in Iowa. Women's best opportunities are in radio and garment factories. At present more than 1,800 girls are working on overalls, awnings and similar products. (Des Moines Herald, December 11, 1941.)

KANSAS

Training of women for defense jobs is under way in Wichita. Courses began with 40 and it is hoped 150 may be trained. (Wichita Eagle, January 7, 1942.)

MARYLAND

The Director of Vocational Defense Training in Maryland says that 3,000 women, age 18 to 35 are wanted at once for training (Baltimore Sun, December 15, 1941.)

The school of engineering at Johns Hopkins, Baltimore, will conduct courses for women for the first time. (Baltimore Sun, December 11, 1941.)

A class of 60 women began training for defense work in Hagerstown, January 12. (Baltimore Sun, January 11, 1942.)

MASSACHUSETTS

Manager of the State Employment Service expects a heavy increase in the employment of women to replace men. Plans are being made to enlarge the classes for women at the Springfield and Chicopee trade schools. At present less than 150 are being trained in specialized courses.

MICHIGAN

A barber college in Detroit has its largest enrollment of women students in its history. (Charleston, W. Va., Mail, December 8, 1941.)

MISSOURI

The National School of Aeronautics in Kansas City will soon open courses for training women for work in aviation and munitions plants. About 3,000 will be trained. It is estimated that more than 10,000 jobs in defense industries will be open to women in the Kansas City area. (Kansas City Journal, January 3, 1942.)

NEW ENGLAND

Arthur C. Gernes, regional labor supply officer, at a meeting of State Employment Security Administrators, said "Wherever a job can be filled by a woman we must try to provide preliminary or supplementary training for her. Facilities of the N.Y.A., Vocational Schools, W.P.A., and the Training-Within-Industry Section of O.P.M. must be fully used to train women now for defense production jobs". (Boston Globe, December 12, 1941.)

NEW HAMPSHIRE

The Deputy Commissioner of Education announces that women will now be accepted in the pre-employment courses in Portsmouth and in 12 other cities and towns. If 12 to 15 women register for one course in a given school a new class can be started for them in 10 days. (Portsmouth Herald, January 3, 1942.)

NEW JERSEY

Girls assembling and on the tack line at Aircraft Service Company, Bendix, have been asked to take an 8 weeks' course in welding. Now making $16 to $35, they should earn $45 and $50 working with men as qualified welders. The supervisor of the school at Nyack, N. Y., said women in many cases are better acetylene welders than men. They learn faster and have better coordination. (New York City Evening Post, December 10, 1941.)

The Paterson Board of Education inaugurated courses in machine work for women December 20, and will put 375 women into classes as quickly as possible. Machine trades are being taught in Girls' Vocational School in Newark, including drill and punch press, milling machine and turret lathe operating. They are also doing welding, soldering, assembling, testing jig work, tapping, sorting, inspection, blue print reading. (Newark Evening News, Dec. 20, 1941.)

NEW YORK

Defense training classes for women beginning in January and February are to train a thousand New York City factory girls for defense jobs. These girls are members of the United Electrical, Radio and Machine Workers, and most are unemployed. Five hundred unemployed have already registered. Night classes for employed women will be started in February. (Daily Worker, January 11, 1942.)

Picture of only woman in a new welding class at Pratt Institute. (New York Times, January 17, 1942.)

Hundreds of young women are being trained at a Binghamton work center of N.Y.A. (Christian Science Monitor, December 6, 1941.)

A survey of 12 major defense plants in New York City shows that all but one want women trained under the program of the Defense Training Institute. Thirty weeks' courses are designed to train men and women as draftsmen, tracers, mathematicians, testers, inspectors, and other jobs on a sub-professional engineering level. One plant responding expects to establish an entire "women's floor." (New York Times, January 8, 1942.)

More than 1,300 women are enrolled in light assembly, inspection and machine shop courses, organized in Rochester by Mrs. Anna T. Brown under the National Defense training program. (New York Times, January 4, 1942.)

The State director of N.Y.A. has instructed shop superintendents in 36 N.Y.A. work centers in up-State New York to assign girls to as many types of shop work as possible so they will be ready to work in case of labor shortage. (Schenectady Union-Star, January 3, 1942.)

The Delehanty Institute, New York City, planned late in December to begin to give mechanical training to about 200 women at a time in preparation for work in war industries. The Institute had never admitted women but recently had requests from more than 400. (New York City Journal and Am., December 21, 1941.)

Total enrollment in training courses in New York on September 30, 1941 - 32,649, including 537 women. 2/ (p. 539.)

Aircraft Plant in Nassau-Suffolk area asks that a small number of women be trained in defense school. If experiment successful, women may be accorded equal opportunity with men for training in selected occupations. 2/ (p. 547)

A training course was offered women in Buffalo for work in a radio plant. Because of shortage of materials they cannot now be employed but demand for airplane radios is likely to lead to their ultimate employment. 2/ (551)

It is difficult to obtain suitable trainees for night courses in the Rochester area. In November 360 women were taking training largely on assembly. Training of women in light machine-shop work has been abandoned due to lack of demand. 2/ (p. 553)

2/ New York Department of Labor Employment Review, December 1941.

In Elmira readiness to use women is reflected in the training courses where they are studying to become inspectors. [2]

NORTH CAROLINA

The School of Engineering at State College has 2 young women now enrolled in aeronautical engineering. Short courses to train non-college people for war work are also planned. The Glenn Martin Company has written asking for women who are qualified graduate engineers. They would also consider women with college backgrounds of mathematics and science and related fields. (Raleigh News and Observer, January 1, 1942.)

OHIO

Defense training classes in Cleveland will probably be opened to women since enrollment of men has fallen from 1,200 last summer to 750. Plans for teaching women machine-shop trades are in formative stage. (Cleveland Press, December 19, 1941.)

The Curtis-Wright Corporation, Columbus, Will admit 25-30 women to the plant's training school December 29 to prepare for riveting and machine shop jobs now held by men. (Philadelphia Record, December 28, 1941.)

OKLAHOMA

The Tulsa public evening school will offer a course in drafting for women. Several firms have already begun to employ women in this type of work. (Tulsa World, December 28, 1941.)

PENNSYLVANIA

The Williamsport Technical Institute is accepting women for training on defense work on the same basis as men, except that unemployed men will be given preference over women if class numbers are limited. (Williamsport Sun, January 5, 1942.)

The State Public Instruction Department plans to start classes to train women for industrial jobs. (Easton Express, December 23, 1941.)

In Allentown, 22 young women are in training at the Pennsylvania School of Aeronautics. (Allentown Call, December 13, 1941.)

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[2] New York Department of Labor Employment Review, December 1941.

TEXAS

Machine shop and auto mechanics courses at the Dallas Public Evening School will be open to women when work is resumed in January. Later other shop courses may be open to women. (Dallas News, January 2, 1942.)

January 4, 130 women were reported starting training in welding. (Dallas Times-Herald, January 4, 1942.)

NEW OR EXPANDING PLANTS THAT MAY EMPLOY WOMEN

INDIANA

A plant to make cartridge cases, another naval ordnance are under construction in Indianapolis. Each will need about 2,500. A training program has been set up for the latter. 1/ (p. 31)

LOUISIANA

The shell-loading plant at Minden will need over 6,000 factory workers about March. 1/ (p. 56)

MARYLAND

A Baltimore aircraft plant will need 17,000 more workers by March. A Hagerstown aircraft plant has added new plant facilities and needs more workers including welders. 1/ (p. 17)

MISSISSIPPI

The bag loading plant at Flora, now building, will require some 10,000 workers. 1/ (p. 50)

NEW YORK

In New York City, makers of professional instruments expect to add more than 3,000 by the end of February. 1/ (p. 20) An electrical-machinery plant in Schenectady plans to add about 2,000 by the end of the year and 2,000 more thereafter. 1/ (p. 21)

Expansion of ordnance production at Rochester and Poughkeepsie is expected to raise employment by 4,000 and 2,000 respectively. An electrical company plans to build between Hudson Falls and Ft. Edward and employ 500. (The Employment Review, N.Y., December, 1941.)

Five aircraft plants on Long Island will add 8,000 by March and 6,000 more by June. 1/ (p. 17) Optical companies in Rochester are expanding and will employ hundreds of new workers. 1/ (p. 24)

OHIO

The Canton TNT plant will need 2,000 by next spring, a munitions plant near Cleveland, 3,000 by next summer. 1/ (p. 3)

More than 6,000 workers will be needed in aircraft plants by the first of the year, including 4,000 in Akron. 1/ (p. 30)

1/ Labor Market Development, November 1941.

A new Curtis-Wright bomber factory was dedicated in Columbus, December 4. Beginning with 3,600 employees, 13,000 will eventually be employed. (New York Times, December 5, 1941.)

PENNSYLVANIA

An Eldred munitions plant will hire 150 a month for several months. An ordnance firm in Allentown will begin hiring 400 in December. 1/ (p. 19)

$10,430,288 to General Electric, for plant and equipment in Erie to produce naval equipment. 3/ (Information Digest, December 3, 1941.)

TENNESSEE

About 4,000 production workers will be needed for the Volunteer Ordnance Works near Chattanooga, building of which is just begun. 1/ (p. 40) An aircraft plant in Memphis has 900 workers now and will need 2,100 at peak. 1/ (p. 43)

TEXAS

About 20,000 workers will be needed in new aircraft plants including 10,000 by July in a Dallas plant, 7,000 in Ft. Worth, by end of 1942. The shell loading plant at Texarkana will need about 10,000 workers. 1/ (pp. 50-51)

UTAH

The small-arms plant at Salt Lake City will hire 1,090 in next 30 days. 1/ (p. 74)

VIRGINIA

Plants in Richmond increased cigarette production 35 percent over 1940. All plants have put on an extra night shift to meet new production schedules. 1/ (p. 43)

1/ Labor Market Development, November 1941.
3/ Construction authorized by Government under defense program.

SRA GUIDANCE PUBLICATIONS

Occupational Reprints AND ABSTRACTS

No. 104

SCIENCE RESEARCH ASSOCIATES • 1700 PRAIRIE AVE. • CHICAGO

WOMAN POWER IN WORLD WAR II

Reprinted from the *Woman Worker*

Building Woman Power Important to Defense

"Women have proved indispensable to war production in England, and we must prepare to expand their usefulness to our industries", stated Sidney Hillman, in charge of labor supply and training in the new War Production Board.

"The Government will expect a gradual but constant substitution of women in industry and agriculture for men who are fit to fight", according to Brig. Gen. Lewis B. Hershey, National Selective Service Director.

Among types of work in which the Employment Service reports labor already short, and which women can perform or be trained to perform, are drill-press operation, mechanical-instrument making, semiskilled grinder operating, heat-treating occupations, core making, radio assembly, arc welding, riveting, air-frame assembly, fabric work, inspecting, lens grinding, coil winding and coil assembly, and occupations in making optical goods, clocks and watches, and electrical equipment. In England women do effective work operating machines for which shortages are reported here, such as engine and turret lathes and boring and milling machines.

Women Making Instruments for Defense.

The lack of a uniform policy in the employment and training of women is shown clearly in a recent Women's Bureau study of women workers in the manufacture of instruments.[1] In 3 plants that employ women on a variety of operations and in relatively large proportions, the most open-minded attitude toward increasing women's employment was found. In most plants, though much of the work is light and little is beyond the physical ability of women, prejudice on the part of management is hedged against them. The proportion of women in the 17 plants visited ranged from 3 to 50 percent, and their number from 6 to nearly 1,400.

Only two plants had courses of study and specific training programs, and in one of these only men had been admitted because the training was part of an up-grading plan and the policy was to restrict women to unskilled repetitive work. In all other plants, training was on the job. Many beginning jobs in machine shop, assembly, and inspection sections are closed to women because these operations are regarded as the beginning step for young boys.

From the survey it was clear that women could do part or all of certain jobs now done only by men. Their proportion could be increased, often extensively, on jobs now done by both men and women. This is the over-all picture of the 17 plants. In some, women were working satisfactorily on machine and assembly operations for which, in certain other plants, women have not even been considered. Though most of the plants have not offered any special training to women for job progression and up-grading, have not tried to give them training or responsibility for set-up of machines, and have limited their work to unskilled repetitive tasks, the generalization often is made that women have no mechanical ability, interest, or aptitude. In a few plants where they are allowed to do so, some women set up their machines, a responsibility of many women in British factories.

Women Take Part in Making Airplanes.

Airplane plants are taking women in small but increasing numbers. Late in 1941 the Women's Bureau received reports from several plants that when visited in the spring had few or no women on production. For one plant the recent report shows 350 women now employed, for another plant over 500. There are in operation 60 plants doing airplane assembling, 70 making parts and accessories, and 11 making engines. In the 26 principal assembly plants about 2,300 women were on production work last November, an increase of 19 percent from October. In 17 of these there either were no women or women were less than 1 percent of the labor force, but in 4 others from 5 to 10 percent of the productive workers were women, and in 2 plants women comprised 12 and 15 percent. A recent British report states that in that country the aircraft industry is 30 percent staffed by women and that this could be increased to 70 percent.

Most women have been on sewing or in the fabric departments, but Women's Bureau studies and other data show that women can be employed in almost every production department with only short training periods. In several large plants women now are on production jobs throughout the plant. In a large midwestern plant, for example, women in the sheet-metal department operate drill presses, hand drills, and other machines. They also work on assembly of oil and gas lines, do all types of bench work, and install the radio in the plane. In the woodworking department women operate band saws, sanding belts, and do nailing and gluing of small wooden parts in jigs—in fact, do all work on smaller sections later assembled by men. At the special request of this plant, national defense training courses in woodworking were given to women. Minimum pay rates are 60 cents an hour, the same for women and men.

Elsewhere, a large plant introduced women first in cutting and sewing, later placing them in most of the other departments, processes being so simplified under the quantity-production schedule that little training was needed. Time required for the job of assembling electrical parts and wiring had been greatly reduced. Women now work in the machine shop, and even on final assembly, where a powered conveyor line is used. Fuselage frames are so carried as to give an unobstructed floor and allow work to be done from a normal position. The fact that almost 90 percent of these women had had manufacturing experience, including work on radios, phonographs, plastics, and many small-machine operations, shows the possibilities of placing women unemployed through priorities.

The policy announced by another plant in hiring women is to take first single women, married women with husbands in the armed forces, widows, and those with husbands unable to work. Second consideration is given women with husbands in gainful work.

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[1] Women's Bureau. The Employment Of and Demand For Women Workers in the Manufacture of Instruments—Aircraft, Optical and Fire-Control, and Surgical and Dental. November 1941.

Health and Safety of Women in War Industries

A CONSIDERABLE increase in industrial injuries was reported early in the defense program. Speed-ups, lengthened hours, rapidly increased forces (including new workers unaccustomed to their jobs) all have their effect in causing such injuries. The National Safety Council reported that in the first 2 months of 1941 the accident frequency rate increased by 16 percent over the same 2 months of 1940. It was estimated for 1940 that the loss through industrial injury or death was equal to a full-time year's employment for about 780,000 workers.

The British Experience, 1940.

The 1940 report of the Chief Inspector of Factories in Great Britain shows, after more than a year of war, a considerable increase in accidents over several previous years, as well as loss in production after a period of unrestricted hours (discussed on p. 12).

Fatal accidents in 1940 were 24 percent above 1939, nonfatal accidents 20 percent above. Increases in certain defense industries were even greater: Engineering, 33 percent; making of machines and motor vehicles and so forth, 47 percent. The effect of new and untrained labor, including very many women, was seen in the increase of 56 percent in accidents on milling machines, of 48 percent in those on power presses, and a decided increase on automatic lathes and drilling machines. Accidents due to loose hair and clothing increased, leading to a new campaign for the wearing of good caps and overalls and the control of loose articles of dress. A special educational campaign was begun in October 1940 and met with considerable success.

Women as the Sufferers (Michigan).

The extent to which women suffer in the tremendous toll of industrial injury in this country can be judged only from sample data. A Michigan report gives some indication of this. In the year ending June 30, 1940, 1,400 women workers in that State were compensated for industrial injuries, 82 of them for permanent partial disability. More than 117,000 days were lost by the women, and nearly $149,000 was paid them in compensation. Of the injured women, 308 had one or more dependents.

Automobiles and foundries and machine shops—industries closely connected with war production—accounted for more than one-fifth of all the women injured and for almost two-thirds of those with permanent partial impairments. Together these two industries accounted for more than one-fourth of the total days lost and for nearly two-fifths of the compensation paid.

The great majority of the permanent injuries to women in manufacturing (90 percent in defense industries) were due to machinery. A program for prevention should include adequate guards and machinery upkeep; safe clothing, goggles, and so forth (2 women lost the sight of both eyes, 7 the sight of one eye); and avoidance of fatigue from excessive speed or long hours.

Nursing Service Needs Increase.

As industrial nurses, women may have a part in reducing the loss from accidents, especially since many serious infections can be prevented by adequate first aid. However, many plants, particularly the smaller ones, have little or no nursing service. According to the latest Census, two-thirds of the total factory wage earners were in plants with 500 or fewer employees, and a survey by the United States Public Health Service found that in nearly 90 percent of the factories of this size no nursing service whatever was available. This survey, covering a total of 1½ million workers, showed that practically two-thirds had no access to plant nursing facilities, either full- or part-time.

In War and After—What of Women's Jobs?

A LOOK into future employment opportunities for women may indicate that postwar chances will lie to a considerable extent in service, clerical, and sales occupations, if indications are taken from the one State that has collected employment figures for both men and women consistently over a long series of years—Ohio. Analysis of these data, considering especially employment in the period of World War I and in the postwar days, was made by Ruth C. Hutchinson [1] for the use of the National Youth Administration for Ohio in planning a vocational training program for girls. Source material was the monthly employment data of the Ohio Department of Industrial Relations.[2] The following paragraphs draw freely on Miss Hutchinson's data and conclusions, with the addition of certain other material from the same Ohio source.

Women Wage Earners Increased 1914–18.

In the period 1914–18, the number of women office workers more than doubled, their increase as manufacturing wage earners was only 57 percent, as wage earners in service 66 percent, and as salespersons 45 percent.

Services Employed an Increasing Share.

In 1914, only 11 percent of all the women grouped as wage earners were in service industries. This proportion increased slightly during the war, and has skyrocketed since, until in 1937 service industries employed 28 percent of all women wage earners. Manufacturing engaged 76 percent of these women wage earners in 1914, 74 percent in 1918, and only 60 percent in 1937. In the service industries the most noticeable increases were in restaurants, office buildings (as cleaners and so forth), and hotels. The one type of service which as a whole lost ground during the war and has since recovered very little is that of laundries and dry cleaners.

Where Manufacturing Increases Occurred.

Of course manufacturing continues to offer many opportunities for women. The industries that employed increasing numbers of women during and after the war were rubber, iron and steel, electrical machinery, and vehicles (largely automobiles). All others except a miscellaneous group showed relative declines in their numbers of women workers, notably textiles, tobacco, leather and its products, and paper and printing.

There is a marked difference between the situation now and at the time of the first World War. In the country as a whole, millions of men still were unemployed during the period of defense expansion, and even the selective service may not create the shortage that existed in 1917. Moreover, many men and women have lost jobs because of necessary curtailments in making certain civilian supplies. For these reasons the employment of women in manufacturing is likely to be chiefly in types of jobs in which already they are known to excel, jobs requiring speed, dexterity, skill, but little strength.

Office Workers Showed Greatest Growth.

The growing importance of clerical work, and to a less extent employment in stores, is clearly shown by comparing data for the years of World War I with the latest Ohio figures to be published by sex, those for 1937. The following table shows the relative importance of the three large groups—wage earners, office workers, and salespersons—before the war, at its height, and in a late fairly normal year:

	Percent distribution of women		
	1914	*1918*	*1937*
All occupations	100	100	100
Wage earners	69	66	58
Office workers	19	24	28
Salespersons	12	10	14

Training That Will Most Help Girls.

In applying the facts shown in the foregoing to N. Y. A. training programs for girls, the following emphasis is indicated:

Continuation and expansion of clerical projects. More than 30 percent of the women workers in Ohio between the ages of 18 and 25 are employed in offices.

Continuation and expansion of projects offering experience in service industries such as hospital assistance, food preparation and service, domestic service, and so forth.

Assignment of qualified girls to all shops, including machine, metal, wood, radio, and others (besides the traditional sewing jobs), where they can gain experience in the particular types of manufacturing activities that are especially adapted to performance by women.

MVR

OFFICE OF PRODUCTION MANAGEMENT

Labor Division

For Immediate Release
Wednesday, Sept. 10, 1941

L-13

DEFENSE SIDELIGHTS

Wanted: 25,000 Workers

Twenty-five thousand more workers will be needed in defense industries in New York City by the end of the year. The city's 410 defense firms now employ 152,000 persons. The New York State Employment Service, which made the count, found an increasing relaxation in age limits for qualified workers "and a lessening of racial, religious and residence specifications that prevailed earlier in the year."

What Weaker Sex?

One of every four manufacturing jobs in the United States is held by a woman, the Census Bureau has discovered. Proof that it's increasingly less "a man's world" was contained in the discovery that 93,736 women and 1,133,654 men are employed in the iron and steel industries.

Gas Goes Glamorous

There's not only a shortage of gas in the East; there's also a shortage of gas station attendants. A Philadelphia gasoline station chain thinks, however, that it has found the solution. They're training young girls, chosen for their charm, poise and ability, to man the stations. The girls will work six and a half hours daily and get $100 a month.

Neck Knacks

Enough neckties and cap braid to supply every man in the Army with two ties and a yard of braid have been ordered by the War Department. A total of 2,300,000 khaki ties, 1,400,000 black ties and 1,740,000 yards of cord braid were ordered.

Life Insurance for the Worker

While Fascism wipes out the life savings of workers in Europe's conquered nations, 12,100,000 American workers have stored up almost 18 billion dollars in group life insurance — representing, on the average, a year's wages for his family in the event of death of one of the insured workers.

The total amount of group life insurance in force is about $2,700,000,000 larger than a year ago, and the number of workers covered is 2,000,000 more than 12 months back, according to one of the nation's largest insurance firms.

A total of 31,300 industrial and commercial concerns now cooperate with their employees to provide group life protection by either sharing the cost or paying the entire premium, the company reported.

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M V R

MEMO TO EDITORS:

Attached you will find the first policy statement issued by the Supply Priorities and Allocations Board at the first meeting of the Board Tuesday, Sept. 2, 1941.

SUPPLY PRIORITIES AND ALLOCATIONS BOARD

Immediate release
September 2, 1941

SPA 1

The following statement was issued today by the Supply Priorities and Allocations Board following its initial meeting:

The President established the Supply Priorities and Allocations Board to speed all-out defense. The Board realizes the magnitude of its task. It recognizes as well that success requires a vigorous, united effort on its part together with unstinted cooperation from the public in accepting certain responsibilities necessary in the defense of our democratic institutions.

To hasten direct action along lines where action is needed, the Board today charted a general policy designed to broaden and accelerate the defense program and to make it more immediately effective.

Specific actions will be announced promptly and full explanation given that there may be no doubt or confusion in the public mind concerning the Board's direction and destination.

Our general policy is simple. Production shall be stimulated and organized to the limit of the nation's resources. Every available man and machine must be employed either on direct defense requirements or at work essential to the civilian economy. Along this road lies protection of our freedom and of the basic economy necessary to maintenance of that freedom.

We must forego the less essential that we may have an abundance of the more essential. By less essential industry is meant those industrial activities involving use of materials and production facilities which sap supplies and machinery resources necessary to a realistic all-out defense program. In some cases this may involve only a part of an industry; in other cases it may involve several parts. Wherever possible to convert the less essential to military or essential civilian production this will be done. Every means will be employed to expedite this process with a minimum loss of time for men and machines. But the less essential must go.

This means cutting off the fat and hardening the muscles.

The Board holds that defense comes first and while recognizing that the civilian economy must be stripped of non-essentials, it must be kept in good running order and in more than standby condition.

To achieve this twin purpose, the Board will devise promptly appropriate controls to assure equitable distribution of materials under a constructive system of priorities, the basic purpose of which is to assure the wisest use of all our resources for the task at hand.

Those materials, which may be hoarded in the cellars and attics of certain industries and traders, will be routed out and put to use where most needed in military and essential civilian production. In its allocations, the Board will consider existing supplies which have been bought in anticipation of future requirements. This means, of course, that the Board will assemble complete, detailed and accurate statements of requirements as to military and essential civilian needs to guide its application and enforcement of priorities. It should be emphasized that the demands of military and essential civilian requirements of this hemisphere must be equally recognized and adequately provided for in allocating materials.

Scare buying against imaginary requirements of the future will be discouraged effectively. Real requirements are too immediate and urgent for us to tolerate the slightest diversion by speculators or others whose actions would destroy our policy of share and share alike the burdens and responsibilities which confront us.

The Board hopes to be able to announce by next week the means adopted to carry out this purpose. There will also be announced shortly a plan for conservation on a national scope of all scarce materials needed in defense production.

The goal our country must reach to perpetuate our freedom and to assure victory for all who share our democratic philosophy means sacrifice. But we must make certain that sacrifices are not imposed because we are wasteful; because we fail to look ahead or because proper use is not made of all available materials, men and machines. For this reason, it is the Board's intention to state publicly the basis of each important step taken, insofar as that may be done without affecting our military security adversely.

The Board believes that if the public knows why it must forego certain comforts; why it must give rather than get; why, in substance, the fat must go and the muscles be strengthened, the cooperation vital to success will be had in full measure.

Thus, in an hour when free men must unite to defend their freedom, we shall move forward in that spirit which holds that none but the free are strong and none but the strong can be free.

Mich

July 17, 1941

Memorandum to Miss Roberta Cook
Office of Government Reports
1405 G Street

From Mary V. Robinson, Director of Public Information, Women's Bureau

Following are names of plants in Michigan having defense orders where it is thought women are employed on such orders:

Detroit
- Bohn Aluminum & Brass Corporation
- Hudson Motor Car Co.
- Timken Detroit Axle Co.
- Eureka Vacuum Cleaner Co.

Ann Arbor
- Precision Parts Co.

Chelsea
- Federal Screw Works

Flint
- General Motors Corp., AC Spark Plug Division

Muskegon
- Continental Motors Corp.

You will wish also to find out from the Detroit office of the N.Y.A. about their projects on which girls especially are being trained; this spring they were already learning lathe operations and doing arc welding. We have been told that the NYA training program in the Detroit area indicated a marked increase in number of girls desired as defense workers.

Some of the training being given to women volunteers (presumably part of the A.W.V.S. program) may be of interest. Women are being trained in elementary auto mechanics to enable them to take over jobs ordinarily performed by men; at the end of a 10 weeks' course they will be qualified to make emergency road repairs. In Detroit, this course is offered by the Willys Co., under its service head, D. A. Walters; the "Willys Motor Defense Corps" meets at Convention Hall, Tuesday evenings, from 7.30 to 9.30.

rfn

Supplement to
CHESTER WRIGHT'S LABOR LETTER

July, 1941

WOMEN WORKERS IN WARTIME

Labor Supply, Demand, June 1941

. . . . . .

Excepting large companies with huge back-logs of orders, most companies, having heard much but having seen little of defense orders, are still unwilling to consider a training program. One company said: "The defense orders we now have we can fill in the next few months without any expansion on our part. Why should we train men for another shift, turn out the work in half the time and then be compelled to lay off all of our workers for lack of additional orders?"

. . . . . .

Certain facts in relation to the present labor demand-supply equation we do know:

1. On first Army registration 16,500,000 men signed up.
2. 750,000 men who will be 21 on or before July 1, 1941, will register on July 1.
3. The Army now numbers 1,385,000 compared with 210,394 officers and men on November 1, 1939. 500,000 of these are selectees (many potential selectees having preferred to enlist).
4. The Navy now numbers 249,727, compared with 120,607 officers and men November 1, 1939.
5. The Marine Corps now numbers 52,000 officers and men compared with 23,000 on December 1, 1939.
6. The number of men in our armed forces now compared with the closing months of the year 1939 is greater by 1,332,726.

. . . . .

On the basis of the present defense program, the Bureau of Labor Statistics estimates that 1,408,000 additional men and women will be required in defense work in the 12 months ending April, 1942, not including those on construction work, but definitely including aircraft, shipbuilding, iron and steel, machine tools and ordnance.

. . . .Mr. Corrington Gill of WPA, a statistician who is highly regarded by many conservative observers, is of the opinion that not more than 2.5 million additional persons will find places in industry in the next 12 months, based on the situation as it appears at this time.

. . . . .

Estimates of available supply of labor, which are now being used in the Labor Division of OPM as a basis for gauging present and future labor market for defense production, simmer down to this fact:

There are only from 2 to 2½ million unemployed workers available for jobs.

For real meaning of this fact, contract April estimates of unemployment made by AFofL (7,552,000) and CIO (10,000,000).

OPM arrives at 2 million figure by first estimating unemployment at from 3½ to 4 million. But it estimates the minimum "float" (workers moving from one job to another or who for other reasons are not actually at work at the time) as 1½ million. Subtract for workers available.

When defense production nears its peak (probably in September) available workers will be further reduced. There will then be an actual shortage of labor in many localities, according to OPM.

. . . . .

The New York Herald Tribune reports air lines hiring more women in information, reservation and ticket departments. At Bridgeport women are working on heavy bandage shears, including the sharpening operation. At Akron, "hundreds of women are working on gas masks," the Cleveland Plain Dealer reports. At Canton, 1,000 of Timken's employees are women, busily engaged in helping to speed the bearings which are vital in every phase of the defense effort. At other Canton plants women are working on shell fuses, X-ray apparatus and many other kinds of defense work. In Buffalo, women are making clips for machine gun ammunition. At Chrysler, women are inspecting metals with the aid of spectroscopes. In the airplane industry women are being used in many occupations, including sewing fabric on wings, tails, fuselages and "doping" same. Likewise their deft fingers are being used in barrage balloon and parachute manufacture, not to mention their work on uniforms. Goodrich Rubber claims women are indispensable in the manufacture of self-sealing gasoline tanks for airplanes. By way of contrast, the Army asks for 100 hostesses and for this work 10,000 apply!

U. S. DEPARTMENT OF LABOR
WOMEN'S BUREAU
Washington

Mobilization in Defense

June 23, 1941.

WOMEN WORKERS AND THE DEFENSE PROGRAM -- A PROGRESS REPORT SUBMITTED TO THE LABOR ADVISORY COMMITTEE OF THE WOMEN'S BUREAU

Topics covered by the report.

Outline A. ~~Developments to date on the following aspects:~~

~~(See detailed report, p. 3)~~

I. Recommended standards for women's employment on defense production.

II. Special field investigations of occupations, working conditions, opportunities.

III. Training

IV. Recent trends in women's employment as revealed by research.

V. Interest of other Government agencies and the public in women and defense, as revealed by requests to the Women's Bureau for information.

Outline B. Suggestions for discussion looking to the future program, with emphasis on the next steps.

I. Maintenance of standards

Attacks on standards and how to meet these.

II. Needed investigations

a. General and thorough investigations of women in defense industries, (also in such industries as textile, clothing, and food closely related to the defense program) covering:

1. Hours and ranges in wage rates for men and women, and working conditions; preferably in States with varying labor laws such as Ohio and Indiana, or New York and New Jersey.

2. Expanding opportunities for women, and factors responsible, in various industries, including the following: airplane engines, bag loading, Optical goods, instruments, elec [illegible] electrical goods, rubber products, etc.

b. Emergency investigations

Growing out of defense adjustments on such questions as:

Lengthening of hours, use of night work or overtime

c. Special surveys of problems growing out of defense conditions, such as:

1. Possible hazards from use of new methods and substances, and fatigue due to speed ups, etc., to be undertaken in conjunction with the Public Health Service or other experts.
2. Trends in regard to women's employments in agricultural and household work.

III. Training

IV. Recommendations as to conditions effecting the general well-being of women workers, such as housing, transportation facilities, care of children, recreation, health, etc.

a. By the Women's Bureau.

b. By the Labor Advisory Committee.

V. Further compilation of data and distribution of information in new or different forms --

a. By the Women's Bureau

b. By the Labor Advisory Committee

June 11, 1941

# PROGRESS REPORT
for
Women's Bureau Activities in connection with Defense

I. Recommending standards for women's employment in defense production

   a. Labor Advisory Committee set-up
   b. Preparation ~~subject~~ of formal reports (see attached sheet)
   c. Serving in consultative capacity
      War Depts. — requiring investigation in some cases
      Depts. Labor — by staff members
      Private Industry

Byswander

II. Special Investigations of -1.Occupations, working conditions, opportunities

   a. Types and numbers of plants visited by staff members (processes for which women, and
      Reports prepared (see attached list)
   b. New developments with reference to use of women (or not)
      Reports on expansion of existing plants
      Reports on new plants in process of being built
   c. Data on numbers of women in defense industries
      1. Research activities
         Occupations
      2. List of important plants with numbers of women (list at end - summarise data given on list)

III. Stress on need for training

   a. Conferences, Reports
   b. Follow-up conference
   c. Contacts to check on progress with Office of Education
      O.P.M.
      N.Y.A.
      W.P.A.

Robinson

   d. Special verbal and newspaper statements

IV. Information and Clearing House Activities

   a. Publication and distribution of printed reports on women workers

Miss Turner

      1. Special Bul. No. 1
         Its contents, numbers distributes and types of recipients
      2. Special Bul. No. 2
      3.

Miss Pidgeon

      4. Woman Worker and reprints
         Every issue covers current develop.
      Mimeographed and typed material
         Mimeographed reports and distribution
   b. Speeches by staff members
      1 List with topics and occasions
   c. News releases and articles

   e. Interviews and contacts with individuals and representatives of various types wanting information

d. (continued)
  1. Other Govt. Agencies
     Newspaper and magazine writers

  2. Radio talks or interviews

  3. Job seekers in defense work

e. Correspondence

f. Exhibits -
   Photographs and file
g. Compilation and distribution of other sources on women as paid workers
   and as volunteers workers
  1. Other agencies - O.P.M., Office of Education (2 things)
  2. Newspaper clippings
  3. List of references
  4. Special file of releases and reports from O.E.M. etc., subjects
     on defense subjects as background material
  5. Volunteer - research
                 direct

V. Appendix
   Attached lists
     1. List of reports published and mimeographed
     2. List of plants

Illinois State Federation of Labor

WEEKLY NEWS LETTER

Entered as Second Class Matter June 9, 1915, at the Post Office at Chicago, Ill., under the Act of [illegible]12.

VOLUME XXVII. No. 10 CHICAGO, ILLINOIS June 7, 1941

Mary Anderson
Director Women's
Bureau
U S Dept of Labor

AMAZING PERSISTENCY

The persistency of the advocates of low wages and unsatisfactory working conditions in their efforts to tear down the living standards of the working people, as evidenced in this session of the Illinois legislature, is amazing. The State Acts providing for minimum wages for fire fighters and policemen are still confronted with an onslaught of unfriendly bills at the State Capitol. Last week Senate bills proposing to wreck the State Acts providing for and fixing the salaries of fire fighters and policemen were tabled. This week, on Tuesday, the House Committee on Municipalities reported out, without recommendation, House Bills Nos. 111 and 112, by Representative James E. Davis, providing for a direct repeal of the Acts. On the following morning, June 4, when the committee reported the bills to the House without recommendation, they were, upon motion adopted by a vote of 63 to 44, ordered placed upon the House calendar in the order of first reading. The roll call vote on the motion follows:

In Favor of the Motion

(For Repealing the Acts)

Alpiner
Bauer
Berman
Bingham
Bowler
Branson
Bruer
Brydia
Burgess
Carpenter
Caton
Clabaugh
Collins
Crowley
Cutler
Dale
Davis
Donohoo
Fitzgerald
Franz, C. D.
Friedland
Funkhouser
Gibbs
Gillogly
Higgins
Holten
Kasserman
Lee
McBroom
Mueller
Nowlan
Perry
Powell
Rategan
Ray
Rennick
Rhodes
Robbins
Salisbury
Saltiel
Sandquist
Scarborough
Schaumleffel
Schnackenberg
Searle
Shannon
Sprague
Stransky
Swanson
Teefey
Thompson
Thon
Topping
Tuttle
Van der Vries
Van Hooser
Vicars
Weber
Welker
Wellinghoff
White
Woodward
Zientek

Opposed to the Motion

(Against Repealing the Acts)

Allison
Auth
Bolger
Bowen
Dinneen
Donnelly
Edwards
Franz, Matt
Garman
Gorman, H. J.
Gorman, J. J.
Grebe
Green, Hugh
Greene, E. A.
Halick
Harris
Hayne
Hruby
Hunter, David E.
Hunter, E. C.
Jenkins
Jezierny
Kaindl
Keller
Kelsey
Knauf
Lawler
Lewis
Libonati
Martin
Marvel
McCabe
Mills
Mundy
O'Grady
O'Neill
Peffers
Robison
Russell
Schuler
Skarda
Sullivan
Upchurch
Warfield

Absent or Not Voting

Adduci
Ashcraft
Barbour
Boyle
Brands
Broche
Browner
Coyle
Daly
DeGafferelly
Dillavou
Dukes
Finucane
Flanigan
Flowerree
Gormley
Granata
Hannigan
Hitter
Houcek
Kluczynski
Kosinski
Kuklinski
Lorton
Luckey
Marzullo
McDonald
McGaughey
McGrath
Mioduski
Noonan
O'Keefe
Petrone
Querfeld
Quinn
Ruddy
Ryan, James J.
Ryan, John G.
Smith, J. W.
Smith, Ora
Stewart
Thornton
Williston
Wood

These bills are being watched closely and vigorous efforts will be made to prevent their passage.

INJUNCTION BILL REPORTED OUT

Labor's revised Anti-Injunction Bill—House Bill No. 717 by Representative Joseph Sam Perry—was reported out of the Judiciary Committee of the Illinois House of Representatives on Wednesday afternoon, June 4, with a favorable recommendation by a vote of 16 to 6, one committee member answering "Present."

The principal change in the Act, provided by the proposed measure, is that before issuing an injunction it would be necessary that the testimony of witnesses be taken and that the court find a specific statement of fact. At the hearing last Wednesday, Attorney D. D. Carmell of Chicago, counsel for the Illinois State Federation of Labor, explained the provisions of the bill and presented arguments in its support.

The motion to report the bill out with a favorable recommendation was offered by its sponsor, Representative Perry, seconded by Representative Roland V. Libonati. The roll call vote was as follows:

In Favor of the Bill

Allison
Bowen
Branson
Burgess
Coyle
Edwards
Kasserman
Lawler
Libonati
Perry
Saltiel
Sullivan
Tuttle
Welker

Against the Bill

Friedland
Greene, E. A.
Sprague
Swanson
Thon
Woodward

Answering "Present"

Daly

Absent or Not Voting

Ashcraft
Barbour
Collins
Cutler
Davis
Green, Hugh
Jenkins
Lee
Rennick
Searle
Stransky
Vicars

A BAD SITUATION

The legislative situation at the State Capital as affecting the interests of labor in Illinois is discouraging. Not one single labor bill, up to the present, has been enacted. Less than three weeks of the session remain. Frankness and honesty require that the trade unionists of Illinois be informed that the outlook is one to cause grave concern. Those familiar with legislative work do not recall any session during the past quarter of a century that has seemed so hopeless as the present one. An utter disregard of the rights, and the interests, and the needs of labor is manifest on all sides. Unless many of the legislators show an entirely different disposition during the concluding days than they have shown throughout the entire session, the Sixty-second General Assembly of Illinois will go down in the annals of Illinois as its most reactionary session.

ADVANCED TO THIRD READING

The Strip Mine Bill, which was taken from the House Committee on Judiciary by a vote of 82 to 34 and placed in the order of first reading on the House calendar on May 4, was advanced from second to third reading on Wednesday, June 4. The measure, which is known as House Bill No. 59, is sponsored by Representative Paul Powell.

UNEMPLOYMENT COMPENSATION BILL

The bill designed to bring about improvements in the Illinois Unemployment Compensation Act, introduced in the Illinois Senate by Senators John M. Lee, R. G. Crisenberry and Charles H. Thompson as S. B. No. 24, received favorable consideration at the hands of the Senate Committee on Judiciary last Wednesday, June 4. The committee voted to report the bill out with a recommendation that it do pass, with the understanding that certain agreed amendments to the measure would be proposed when it is called on the order of second reading.

ANTI-HOUSING BILL STOPPED

The bill proposing to prevent any land or property of a housing authority used as a part of any housing project undertaken in the future from tax exemption was virtually killed when the Illinois House Committee on Revenue last Tuesday postponed the hearing on the measure scheduled for that date to June 30, the closing day of the present session. The bill, introduced in the House as H. B. No. 713, was sponsored by Representatives Edward J. McCabe and Harry L. Topping. The motion to postpone was carried by a vote of 13 to 12. Both the Illinois State Federation of Labor and the Chicago Federation of Labor were opposed to the bill.

COMPENSATION BILLS REPORTED OUT

The Committee on Judiciary of the Illinois Senate last Wednesday afternoon, after a short hearing, voted to report out, as committee bills, with a recommendation that they do pass, two "agreed" bills which were substituted for the bills originally introduced in the Illinois legislature on behalf of the Illinois State Federation of Labor by Senator R. G. Crisenberry as Senate Bills Nos. 194 and 195. The bills, as reported out, provided for a ten per cent increase in death awards under the Workmen's Compensation and Workmen's Occupational Diseases Acts. An agreement on the provisions of the substitute bills was reached following conferences between representatives of workers and representatives of employers, together with sub-committees of the Senate and House Judiciary committees, appointed for that purpose, presided over by the Chairman of the Illinois Industrial Commission, which has the responsibility of administering the Acts. The new bills are numbered S. B. 682 and S. B. 683.

SENATE ACTS FAVORABLY

The Illinois Senate last Wednesday passed the proposed amendment to the State Civil Service Act which would provide that no officer or employee shall be required to perform the duties of any class with a greater remuneration than his own classification, except upon proper promotion to that classification and compensation in accord therewith. The measure, which is known as Senate Bill No. 175, is sponsored by Senators Dixon, Beckman, Searcy, Thompson, Carpentier, Crisenberry, A. P. Benson, Downing, Bidwill and Flagg. It will now be sent to the House of Representatives for consideration and action.

ILLINOIS STATE FEDERATION OF LABOR
Weekly News Letter

Devoted to the Interests of the Trade Union Movement
Published Weekly by
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EDITORS
Victor A. Olander Reuben G. Soderstrom

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Vol. XXVII June 7, 1941 No. 10

AN ENLIGHTENING COMPARISON

An illuminating expose of mental attitudes and processes in relation to human welfare as compared to property rights is disclosed in a comparison of voting records of Illinois legislators in relation to two bills, one relating to property and one to human welfare, one designed to prevent a retailer or wholesaler from disposing of any item of merchandise at less than cost to himself, and the other designed to prevent a worker from disposing of his services for less than the standards set by the Federal Government as a minimum below which the worker becomes either directly or indirectly a partial charge upon the State. The former bill, House Bill No. 63, passed the Illinois House of Representatives on April 29, by a vote of 99 to 15. The latter bill, House Bill No. 441, was defeated in the House on May 7 by a vote of 73 to 52 on a proposal to table a motion to non-concur in the recommendation of the Committee on Industrial Affairs that the bill do not pass. The latter bill was generally referred to as the Wage and Hour Bill. A comparison of the roll calls, showing the attitudes of the members of the Illinois House of Representatives on the two bills, is very enlightening. Here it is:

	For Minimum Price	For Minimum Wage	Against Minimum Price	Against Minimum Wage	Absent or Not Voting Minimum Price	Absent or Not Voting Minimum Wage
Adduci					×	×
Allison	×	×				
Alpiner	×	×				
Ashcraft				×	×	
Auth	×	×				
Barbour					×	×
Bauer	×	×				
Berman	×			×		
Bingham	×			×		
Bolger		×	×			
Bowen		×			×	
Bowler	×			×		
Boyle	×	×				
Brands		×			×	
Branson	×			×		
Broche	×					×
Browner					×	×
Bruer	×			×		
Brydia	×			×		
Burgess		×	×			
Carpenter	×			×		
Caton	×					×
Clabaugh	×			×		
Collins	×			×		
Coyle	×	×				
Crowley	×	×				
Cutler	×			×		
Dale	×			×		
Daly	×	×				
Davis				×	×	
DeGafferelly	×			×		
Dillavou	×			×		
Dinneen	×					×
Donnelly		×	×			
Donohoo	×			×		
Dukes	×			×		
Edwards	×			×		
Finucane	×					×
Fitzgerald	×	×				
Flanigan	×	×				
Flowerree	×					×
Franz, C. D.	×					×
Franz, Matt		×			×	
Friedland	×			×		
Funkhouser	×			×		
Garman	×					×
Gibbs	×			×		
Gillogly	×			×		
Gorman, H. J.	×	×				
Gorman, J. J.	×	×				
Gormley	×	×				
Granata	×					×
Grebe	×	×				
Green, Hugh	×			×		
Greene, E. A.	×			×		
Halick	×			×		
Hannigan	×	×				
Harris	×	×				
Hayne			×			×
Higgins		×			×	
Hitter	×			×		
Holten	×	×				
Houcek	×			×		
Hruby		×			×	
Hunter, David	×			×		
Hunter, E. C.		×	×			
Jenkins	×			×		
Jezierny				×	×	
Kaindl	×	×				
Kasserman		×	×			
Keller	×	×				
Kelsey				×	×	
Kluczynski	×					×
Knauf		×			×	
Kosinski	×			×		
Kuklinski	×			×		
Lawler		×			×	
Lee	×			×		
Lewis	×			×		
Libonati		×	×			
Lorton			×			×
Luckey	×			×		
Martin	×			×		
Marvel		×			×	
Marzullo		×			×	
McBroom	×			×		
McCabe					×	×
McDonald	×			×		
McGaughey	×					×
McGrath		×	×			
Mills		×	×			
Mioduski		×	×			
Mueller	×			×		
Mundy		×	×			
Noonan					×	×
Nowlan	×			×		
O'Grady		×			×	
O'Keefe	×					×
O'Neill				×	×	
Peffers	×			×		
Perry	×	×				
Petrone	×					×
Powell	×	×				
Querfeld	×			×		
Quinn	×					×
Rategan		×			×	
Ray	×			×		
Rennick	×			×		
Rhodes	×					×
Robbins				×	×	
Robison	×			×		
Ruddy	×					×
Russell		×			×	
Ryan, J. J.		×			×	
Ryan, J. G.	×	×				
Salisbury			×	×		
Saltiel	×					×
Sandquist	×			×		
Scarborough	×			×		
Schaumleffel	×			×		
Schnackenberg	×			×		
Schuler				×	×	
Searle	×			×		
Shannon					×	×
Skarda					×	×
Smith, J. W.					×	×
Smith, Ora				×	×	
Sprague				×	×	
Stewart		×	×			
Stransky	×			×		
Sullivan			×	×		
Swanson	×			×		
Teefey		×			×	
Thompson				×	×	
Thon	×			×		
Thornton	×					×
Topping	×			×		
Tuttle	×	×				
Upchurch	×	×				
Van der Vries				×	×	
Van Hooser	×			×		
Vicars		×			×	
Warfield	×			×		
Weber	×			×		
Welker	×			×		
Wellinghoff	×	×				
White				×	×	
Williston				×	×	
Wood				×	×	
Woodward	×			×		
Zientek	×			×		

Party Affiliations

The roll call shows 57 House members voting for a minimum price for commodities and voting against a minimum wage for workers who must purchase the commodities. In other words, 57 members of the House recorded themselves in favor of protecting property and against protecting labor. What are the political party affiliations of the House members who voted for property and against labor? They consisted of 48 Republicans and 9 Democrats!

POSTPONED AGAIN

The hearing on Senate Bill No. 71, which had been set for May 28 before the House Committee on Judiciary and at that time continued to June 3, has again been delayed, Representative Searle of Rock Island raising the question of "quorum." Other bills are heard before that committee without question and without a quorum being present, but when bills of interest to labor are reached, the question of "quorum" is immediately brought forth to delay consideration and action.

BARBER BILL ON SECOND READING

The bill sponsored by Senators R. G. Crisenberry and Thomas E. Madden on behalf of the Illinois Journeymen Barbers, Senate Bill No. 126, has been reported out favorably by the Senate Committee on Industrial Affairs and is now on the order of second reading in the upper branch of the State legislature. A similar bill in the House, H. B. No. 270, still remains in the House with the Committee on Efficiency and Economy there.

OPPOSE STATE EMPLOYEES PENSION

The sub-committee of the House Committee on Efficiency and Economy, to which House Bill No. 537 had been referred, took action last Tuesday to recommend to the full committee that the measure be reported out with a recommendation that it do not pass. The proposal provides for the creation and maintenance of a "State Employees Retirement System."

WOMEN IN DEFENSE EMPLOYMENT

Address by Joseph D. Keenan, Labor Relations Consultant for the Labor Division, Office of Production Management, Before the Annual Conference of the Women's Trade Union League of Illinois, Tuesday, May 27, 1941

As the National Defense Industrial Program expands, more and more women are finding their way into defense employment. They are being employed in new occupations, they are showing fitness for such employment, and as our industries expand more and more and the drain upon our national labor supply becomes greater and greater, it is inevitable that the trend toward the employment of women in defense callings will increase. During the World War, it is recalled women proved their abilities in many callings from which they had been customarily excluded and performed such valuable services in taking the places vacated by the men at the front that the World War has been commonly considered as a milestone in women's industrial and economic emergencies. From the indications that exist to date, the present program of national defense will see this trend broadened and enhanced. The Thirty billion dollars so far appropriated and authorized by Congress are presumably only the beginning of our defense program, but this thirty billion dollars alone will require for its completion the equivalent of one year of labor for 16,000,000 people. This demand will utilize our labor supply to a considerable degree of its capacity, and will involve our supply of skilled labor to a point at or beyond its present capacity. It is not too much to say that without a very considerable employment of women in the defense industries a rapid completion of our defense program would be all but impossible.

This was officially recognized on February 21, 1941, when Mr. J. W. Studebaker, the United States Commissioner of Education, addressed a memo to all executive officers in the Defense Program of Vocational Education urging that women be vocationally trained. Mr. Studebaker's letter outlined the present situation so precisely that I quote it in part:

> "As the number of employable men in the nation decreases and as defense industries continue to expand and call for larger numbers of women to fill jobs for which they are especially fitted, more and more women will need either supplementary or refresher vocational training."
>
> "While the supply of men to be trained under the vocational division of the National Defense Training Program is not yet exhausted it is well to study women's place in industry and prepare for their role in this national emergency. As additional men are called for selective service and as industry absorbs the supply of employable men now being trained in the program, thousands of women will be called upon for types of defense industry work for which they are fitted. . . .
>
> "I suggest that in your local planning for defense education and in your advisory committee meetings you take these facts into consideration and find the vocational niches that women can fill now or in the future as the preparedness program expands."

Mr. Studebaker called attention to the fact that the training courses in which women were already enrolled included drafting, statistical methods in industrial construction, machine shop practice, industrial chemistry, radio communication service, light manufacturing, manufacturing, techniques, electrical arc welding, blueprint reading, automobile mechanics, elementary aerodynamics, mechanical drawing, airplane mechanics, and airplane ground school. His emphasis is upon training, and rightly so, for training is the prerequisite of defense employment both for women and for men. Of the sixteen million man years of labor which I have mentioned six million or 37.5 per cent must be skilled and an equal amount of semi-skilled. These proportions are considerably higher than the normal requirements of industry which commonly uses only from 20 to 25 per cent of skilled workers. The higher percentage of skilled-requirement is explained by the high degree of precision and care required in making the modern high speed tanks, airplanes, ordinance ammunition and other materials of modern war. This is a war of the workshops—a war of machines—and behind the production of each machine industry the essential contribution of human skill.

Let me briefly indicate the extent of the present approaching drain upon our national supply of skill. In the aircraft industry, to deliver the present contracts 520,000 workers must be employed by October, 1941, which is an increase of 315,000 over October, 1940. The shipbuilding industry, which employed 127,000 last November, must employ at least 388,000 by November, 1942. The machine tool industry must increase from the 80,200 employed on January 1, 1941, to 102,800 at the end of this year and there are similar increases all taking place simultaneously in the automotive industry, electrical manufacturing, ammunition making, arms manufacture, and every other branch of the defense program.

That women workers are of great importance in the textile industry, the food industry, and other industries in the general field of quartermaster supply for the army and navy, is of course a matter of common knowledge. But I think it may surprise a good many people to learn to what extent women are demonstrating their capacities in the capacities for skilled work in the heavier industries above mentioned. Women are working today as solderers, armature winders, welders, electro-platers, punch and drill press operators, inspectors of shells and small cartridges, etchers, valve grinders, barrel reamers, and the light assembly work, semi-skilled machine operation, packing and a wide variety of other tasks. It is not at the present time correct to say, although it is sure to be said, that women are replacing men in the tasks they perform. Prevailingly, the existing picture is that women are employed in the defense plants for types of work which they can do better than men. There is a certain type of task requiring great nimbleness of finger and great precision and patience as to detail, for which many employers are finding women peculiarly fitted. As the program develops and the drain upon labor increases, no doubt there will be actual replacement, but at present the employment of women has prevailingly the character of specialization.

To illustrate: The Winchester plant at New Haven uses women as cartridge inspectors. Its output of 11,000,000 small arms cartridges a week is now being expanded to 17,000,000 cartridges a week and this is made possible by a special order made by Governor Hurley of Connecticut waiving, in the interest of defense, the State statute preventing the employment of women after 10 p. m. In other words, it is the experience of this plant that women are superior as cartridge inspectors and that employment of a night shift of cartridge inspectors removes the bottleneck for increased production. Each cartridge must be tested by a gage set for 1/1000 of an inch of accuracy. The cartridge that does not fit the gage or that is otherwise deficient must be rejected instantly. So of 400 workers to be hired by this plant in the next six months 200 will be women. Similarly, women are to be hired by the Western Cartridge Company at West Alton, Illinois, the Harrington and Richardson Arms Company in Massachusetts, the Remington Arms Company at Kansas City—where about one-third of the working force of 8,000 people will be women—the U. S. Cartridge Company at St. Louis, where about 3,500 women will be employed in a total labor force of 12,000; and at a long list of other ammunition making concerns throughout the country.

At shell loading plants women are being hired as production workers. The plant at Burlington, Iowa, for example, is preparing to employ 2,000 women in a total staff of 8,000. The Ogden Ordnance Depot in Utah will employe 1,200 women, chiefly in loading, small assembly and packing operations. These few cases are but typical of what is going on throughout the nation.

Officials of the B. F. Goodrich Rubber concern at Akron, Ohio, are quoted as saying that the skill of women is absolutely necessary for the manufacture of self-sealing gasoline tanks for airplanes, which are carefully lined with a rubber composition. Goodrich also employs women in the manufacture of special fire hose used by Great Britain in extinguishing the fires due to bombings; they recently turned out a single order for 120 miles of this hose.

Parachute manufacture is another vital defense industry which relies heavily upon women. The Switlik Parachute and Equipment Company at Trenton, New Jersey, has had a 400 per cent expansion in the last year and is now the world's largest manufacturer of parachutes. These demand the highest quality in hand stitching. Women constitute half of the working force of the Switlik concern and are employed in virtually every part of the plant.

The United States Rubber Company and other concerns making gas masks are large employers of women. Boeing, Vultee and other airplane manufacturing concerns use women on fabric work, though some important aircraft companies limit the employment of women to office jobs. A good many companies making bearings, screws and bolts for machinery employ women, and women are employed as machine operators by various wire and mechanical concerns. At Portland, Maine, the Southworth Machine Company is about to hire thirty-five girls who will learn burring, drilling, punch press operation as well as packing and inspection work. Such companies as Seth Thomas Clock and Bendix Radio hire women for assembling operations and the Lufkin Rule Company at Saginaw, Michigan, uses about 440 women in the total labor force of 1,100. Both General Motors and General Electric employ women in production work largely in the assembling of special apparatus. Many women are employed in the glass industry and the number is increasing.

There is one construction company near New York, I am informed, which employs a woman to operate a ten-ton crane. Perhaps enough has been said to illustrate the fact that in a recent survey covering 43 defense industrial areas and 75 defense plants within those areas, there were only two concerns which were not employing women to some extent in actual productive lines as well as in office work. The numbers varied considerably but in most cases from 10 per cent to 50 per cent of the entire working force were women. Of some 4,400 new workers to be employed by the Goodyear bag loading plant at Charlestown, Indiana, 70 per cent are to be women.

There are three distinct phases in regard to the employment of women in the defense expansion period. In the first phase, there is increasing employment in the occupations traditionally held by women, resulting from the general increase in buying power. For example, throughout the country new jobs are developing in sales, clerical and stenographic positions, in the needle trades and other customary fields where women have long served. This phase of general demand for workers appears to absorb primarily those individuals who are normally a part of the labor market. At the present time it seems established that the country is well into this first phase.

The second phase of the type I have been describing, in which is approaching an anticipated shortage of male labor, skilled or semi-skilled, causes employers to search for tasks within their plants to which women could be put. These include light mass production and metal working tasks, machine operations, assembly work and inspection. While, as I have indicated, we have already entered this phase, it has not as yet fully developed and no man can see how far it will go. The third phase of the cycle has been reached in Great Britain but not as yet in the United States. This is the phase in which women enter jobs in trade service, transportation and manufacturing that have been customarily held by men and regarded as men's work. This influx of women in industry releases men for the heavier factory work or for military service. There are scattered instances in American communities where shortages of male labor are threatened today in which this phase may be said to be on the horizon. There are also some communities which are encouraging the use of locally resident women wherever possible, in order to avoid the necessity of importing male labor from other points.

The Labor Training and Supply Branch of the Labor Division, Office of Production Management, finds it widely reported that employers are relaxing their standard as to the marital condition of women workers. In one Connecticut community there is a plan to establish day nurseries to care for the children of married women who have obtained defense jobs.

The increased use of women workers in the defense industries, present and in prospect, places particular emphasis upon the policy of the Labor Division in favor of the maximum retention of social gains. This policy, repeatedly emphasized by Mr. Sidney Hillman, Associate Director General of the Office of Production Management, was initially voiced by the President of the United States and is one of the fundamentals of the National Defense Labor policy. To quote the President's words: "We must make sure, in all that we do, that there be no breakdown or cancellation of any of the great social gains which we have made in these past years. We have carried on an offensive along a broad front against social and economic inequalities and abuses which had made our society weak. That offensive should not now be broken down by the pincers movement of cause who would use the present needs of physical military defense to destroy it."

Those words came with a special significance in a world shaken by the menace of dictatorship. That meant that democracy was not only to arm itself and aid Great Britain to arm, but was to do it by the most enlightened methods of democracy and with the good of the working people of democracy in mind. How does the added entry of women into the defense industries bear upon this policy and this pledge? First of all, it must already have occurred to many in this audience that the demonstrated usefulness of women in the defense industries, and their resulted ability to find defense employment, is in itself a removal of an old inequality and in that sense a social gain. It is a new proof that the discrimination along sex lines which has always characterized our employment situation is a meaningless and wrongful discrimination. We who are present here have always known this; but now our major industries are increasingly finding it out. The emergency is seeing and will continue to see a vast expansion in the recognized fields of feminine employment; and it is the experience of our whole history that a gain of this kind, once it is made, is never fully lost.

But on the other hand, there is one aspect of this situation which requires and is going to require new vigilance. Defense industry is working under high pressure. Speed, day and night operation of plant, peak production, are the watchwords of the hour. What will be the impact of this high tension situation upon those protective laws and standards which many states and the federal government itself have adopted in protection of the health, the efficiency and the safety of the woman worker?

The gains which women have made, through legislation or through the work of labor organizations in the past thirty years, are gains of the type that must not be swept away. The woman who works is recognized by our laws as deserving of special consideration because she is a part of American womanhood. Protection of the gains registered in her behalf must stand high in the list of the social gains which must not be pulled down by misusing the name of our defense endeavor. Rather, defense must afford us an opportunity to extend those gains, and to equalize those conditions of employment in which women are still, for all their progress, at a disadvantage.

Women have every motive for desiring to participate in the work of national defense. There is no sex distinction in the cause of democracy. The women of the totalitarian countries have been enslaved equally with the men. Where tyranny enters, family life is broken up, work is assigned by a despotic state, and no worker, man or woman, is free. Only under a democratic system has the cause of woman advanced and the status of womanhood been progressively improved. All for which we stand is at stake in this present world struggle —the right to develop our talents as we please, the right to labor freely, to worship freely, to assemble freely, to organize freely, to speak freely in our own behalf. The cause of labor and the cause of womanhood are identified with the cause of democracy. In the democratic cooperation between government, labor and industry which is at the core of our country's effort in making itself the arsenal of democracy, I know that this audience, representing the leadership of womanhood in industry, will play its part.

UNFAVORABLE RECOMMENDATION

The Full Crew Bill—House Bill No. 96 by Representatives William J. Lawler and W. O. Edwards—was reported out by the House Committee on Railroads, Aviation and Transportation last Wednesday with a recommendation that it do not pass. The motion to send the measure out with the unfavorable recommendation was made by Representative Milton M. Mueller, seconded by Representative James J. Adduci. The vote, which was 9 to 4, was as follows:

For the Motion

(Against the Bill)

Adduci
Broche
McBroom
Mueller
Ray
Ryan, John G.
Sprague
Topping
Wood

Against the Motion

(For the Bill)

Donnelly
Hannigan
Hunter, E. C.
Ryan, James J.

Absent or Not Voting

Gibbs
Keller
Kelsey
Kosinski
Robison
Thompson
Smith, J. W.

The bill was designed to require the employment of full crews in the operation of railroad trains. It was introduced on behalf of the Railroad Brotherhoods and had the endorsement of the Illinois State Federation of Labor and the Joint Labor Legislative Board of Illinois.

STILL A MENACE

The Clabaugh bill to amend the State Civil Service Act—House Bill No. 891—is still a menace to that law. The measure is designed to eliminate from the provisions of the Act certain protection to workers coming within its purview which were incorporated therein through the enactment two years ago of the Lottie Holman O'Neill amendments.

On Wednesday, May 28, the House Committee on Civil Service reported the measure out with a recommendation that it do not pass. That action was reported in last week's issue of this publication. On the following morning, Thursday, May 29, when Representative Charles W. Clabaugh, sponsor of the bill and chairman of the Committee on Civil Service, reported the bill back to the House with the recommendation that it do not pass, Representative R. J. Branson moved that the House non-concur in the report of the committee. The roll call vote on the motion to non-concur was as follows:

To Non-concur

(To save the objectionable bill)

Adduci
Allison
Barbour
Bingham
Bowler
Branson
Broche
Bruer
Brydia
Carpenter
Caton
Clabaugh
Collins
Cutler
Dale
Davis
DeGafferelly
Dillavou
Dinneen
Dukes
Franz, Matt
Friedland
Gillogly
Gorman, H. J.
Granata
Grebe
Green, Hugh
Halick
Hitter
Houcek
Hunter, David
Jenkins
Jezierny
Keller
Kelsey
Kluczynski
Kuklinski
Lawler
Lee
Lewis
Libonati
Luckey
Martin
Marzullo
McBroom
McDonald
Mueller
Nowlan
Peffers
Petrone
Querfeld
Rennick
Rhodes
Robbins
Robison
Ruddy
Sandquist
Schaumleffel
Schnackenberg
Searle
Skarda
Sprague
Stransky
Swanson
Thompson
Thon
Thornton
Topping
Tuttle
Van Hooser
Warfield
Welker
Williston
Wood
Woodward
Zientek

Against Non-concurring

(To kill the objectionable bill)

Alpiner
Ashcraft
Auth
Bauer
Berman
Bolger
Bowen
Boyle
Brands
Burgess
Donnelly
Donohoo
Fitzgerald
Flanigan
Flowerree
Franz, C. D.
Gorman, J. J.
Gormley
Green, E. A.
Hannigan
Harris
Hayne
Hruby
Hunter, E. C.
Kaindl
Knauf
Marvel
McCabe
McGaughey
Mills
Mundy
Noonan
O'Grady
O'Keefe
O'Neill
Perry
Powell
Quinn
Rategan
Ray
Russell
Ryan, J. J.
Ryan, J. G.
Schuler
Shannon
Smith, Ora
Stewart
Sullivan
Teefey
Upchurch
Van der Vries
Vicars
Wellinghoff
White

Absent or Not Voting

Browner
Coyle
Crowley
Daly
Edwards
Finucane
Funkhouser
Garman
Gibbs
Higgins
Holten
Kasserman
Kosinski
Lorton
McGrath
Mioduski
Salisbury
Saltiel
Scarborough
Smith, J. Ward
Weber

The motion was adopted, the House non-concurred in the committee's report, and the bill was ordered placed in the order of first reading on the calendar.

Under the Act as now in force, workers under Civil Service have the right to be heard before discharge. If this bill were enacted into law, that protection would be taken from the workers and there would be little chance of being reinstated, regardless of the justness or unjustness of the cause for dismissal. The measure should be defeated.

OFFICE OF PRODUCTION MANAGEMENT

Labor Division

Not for release before 5:30 PM, EST
June 3, 1941

PM 499

Statement by Sidney Hillman, Associate Director General, Office of Production Management, on the Red Network of the National Broadcasting Company (Washington, WMAL), under the auspices of the League of Women Voters, at 5:30 PM, EST, June 3, 1941.

President Roosevelt's declaration of an unlimited national emergency is a call to action--swift, all-out action. This means many vital things to all Americans. It means that the gravity of the present crisis has shown the need for a new spirit of national unity. It means that we realize more and more that, to insure our own national security, we must end all hesitation and delay. It means that we cannot indulge ourselves in dreams of a false security even though, at the moment, bombs are falling on London and Liverpool instead of upon Boston and Baltimore. It means that the time has arrived when you and I and all of us must live and think and act for national defense.

Our mines and factories must produce all-out aid to Britain and all-out defense for our own country--now! Every tool and every machine turning out defense materials must be kept in continuous operation and at full speed ahead! Behind tools and machines, the workers must, and will, give of their best. The skills and energies of our labor, together with our managerial talents and our great mechanical capacity, must, and will, overtake and outstrip the war production of the totalitarians. By peak production alone can we guarantee our own national safety and bring about the victory of democracy.

Labor--together with management--must establish in every defense plant those working conditions and arrangements which will yield the most efficient production. This means that extra care must be taken to cut industrial accidents. It means a wise staggering or work shifts. It means everything we can do to ensure the most abundant output of defense goods, and to use our idle labor and idle facilities to the full.

The first year of our defense program has just ended. Much has been done. Yet this marks only the beginning of a long, hard road of toil and sacrifice that we all must travel. To succeed in our effort, we will have to dispense, during the emergency, with many of the things that we normally enjoy. Only if we realize this, only if we all join together in our common cause of defeating Hitlerism, can we shorten the struggle and put a swift end to the dangers that now face all of us.

We, who are charged with the responsibility for supplying trained manpower when and where it is needed, must depend as never before upon the help of everyone of you. Unemployed workers--register at your local public employment offices! Enroll in a vocational class to be trained for a defense job! Employed workers--you who are now on jobs that require less skill than you actually have--register your higher skill with employment offices so that your best abilities can be fully utilized in our defense program. If you are now in a non-defense occupation and you have a skill useful to defense, register at the public employment office so that you may be available for defense work. And workers everywhere--remember this: If you need help to place yourself in a defense occupation, notify your local public employment office at once.

Employers--hire labor from your own communities and train it within your own plants! Above all, do not deprive yourself of qualified labor by restricting defense employment because of race, creed or color! The emergency demands this cooperation--nothing less will do.

Our task is only begun. Its magnitude and speed are being set, not by ourselves, but by the foes of democracy. This is a war of equipment--of material power--of workshops. Today's battles are decided in the factories. We must put modern weapons into the hands of democracy's front line defenders--the Army, the Navy, the Air Force and the people of Britain. Let us never say to courageous men that, in their hour of need, America could not supply them with equipment worthy of their courage. Let us resolve, here and now, that the heroes who are fighting democracy's battle will never be called upon to face tanks and dive bombers with only their bare hands and their deathless valor. Let us determine that we shall never allow any democracy to repeat the tragic refrain of "not enough"--of "too little and too late". It is our duty and our privelege to arm the defenders of human freedom with guns, tanks, planes, and ships. The workshops of our free democracy can, and must, and will, conquer the workshops of dictatorship!

Women Replacing Men in Defense Industries

Military Service Needs Deplete Ranks of Available Male Workers--Factories To Need 30,000 More Employes Soon

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In Baltimore Evening Sun, April 29, 1941

The old adage that the woman's place is in the home is daily meeting increasing challenges from employers of the Baltimore area as military service and defense industries continue to deplete the ranks of available male workers.

Reporting that 30,000 additional workers will be needed within the next nine months to help operate defense plants under construction, David L. B. Fringer, director of the State Employment Service, today predicted that the present trend of replacing men called to service with feminine workers would increase substantially.

Machine-Shop Work

Cases at the Employment Service during the past week substantiate this, Mr. Fringer said. "One firm hired a number of women to work in a shipping department when it was found that men were not available; another firm took on several women to replace men in light machine-shop work," he said. "We have other cases where male secretaries and clerks have been replaced with female workers. One movie theater has adopted the policy of using feminine ushers due to the shortness of young men."

"Another instance is that of a large department store in the downtown section which is at present contemplating replacing its entire staff of male elevator operators with female help," the employment director said.

No Mass Move Yet

Investigations conducted by the Employment Service indicate that women who have taken over jobs formerly held by men in filling stations, machine shops and factories are "very efficient," the director said. "It is generally recognized by employers that jobs calling for adeptness and minute handwork can be done as well, if not better, by women than by men," he said. "At present three large electric manufacturing firms employ large numbers of women for assembly work in local factories."

"While there has been no mass employment of women in industrial jobs formerly held by men, there is no doubt at all that such employment is increasing steadily," Mr. Fringer said.

Placing Women in Jobs Gains Steadily Here

More Than 400 Will Receive Work Assignments During April, Says Connelly

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In News, Springfield, Massachusetts, April 29, 1941

Placement of women in jobs has reached a peak within the past few months, Paul A. Connelly, acting manager of the Springfield office of the Massachusetts employment service, declared today.

More than 400 unemployed women will be placed by the end of the month through the work of the women's placement division of which Mrs. Frances C. Pepyne is director, Connelly said.

Last month the total placements by the women's division was 406, of which about 25 per cent was in domestic work and the other 75 per cent in industrial and white collar jobs. This month's figures are expected to show a substantial gain.

Records of the division show that women are receiving substantially higher wages than a year ago, particularly in industrial and stenography lines. A year ago, it was explained, requests for girls in office jobs carried salaries averaging between $12 and $14 a week. Many of the positions open now in the same line of work are offering as high as $18 a week to start.

The division also reported that women are being tried out more every day for industrial jobs which fill places formerly held by men. Many drafted office workers have been replaced by girls, while unskilled industrial positions are opening up daily for women.

At present the reservoir of qualified stenographers, both male and female, is nearing depletion, according to records of the division, and persons who have proper qualifications would do well to register for some of the positions which will open up within the next few weeks.

The women's division of the state service is operated in conjunction with the testing department, headed by Miss Beatrice Lyman. All women applicants for jobs are given tests which reveal their aptitudes and training along the lines for which they are being considered.

Jouett Foresees Need For Women In Defense Plants

In News, Buffalo, New York, April 26, 1941

The possibility of employing women in defense plants, including aircraft factories, in event of a labor bottleneck was seen Friday evening by Col. John Hamilton Jouett, President of the Aeronautical Chamber of Commerce, Inc.

"We may face a shortage in the labor supply," Col. Jouett told some 400 Buffalo Club members and leaders of every phase of the local aircraft industry during an "Aviation Night" program in the clubrooms.

"We may have to start training women on factory jobs that are now filled only by men. You will hear more talk of employing women in defense plants as time goes on. Whether we have a bottleneck in labor remains to be seen."

Pointing out that the nation's plane output is being stepped up rapidly, Col. Juett said aircraft production had increased 50 per cent from December to March.

"Our low point in war production was in December when it totaled about 800 military airplanes, including trainers," he explained. "We turned out 1200 in March of this year, a 50 per cent increase. By next September we should be producing between 1700 and 1800 a month. The peak of 50,000 a year should be reached in July, 1942."

Clipping from Boston Christian Science Monitor, April 25, 1941.

Women are being newly drawn into Massachusetts industry in sufficient number by the needs of the defense program to indicate a definite trend of women toward factory gates, it was reported today by State authorities.

This current of women into manufacturing has developed within the past two months, on the basis of reports coming into the State Division of Unemployment Compensation. The Division operates the State Employment Service.

If the present rate of plant production increases, industry will obviously absorb more women workers, commented an official of the Division.

All Resources

"The Office of Production Management expects defense contractors to utilize all available local labor resources regardless of race, color or sex," Wayne Keith, Associate District Representative of the Office of Production Management on Training Within Industry, said today.

Instances of women going into industry cited by the state division include:

A shipyard is supplying an expert draftsman to a local trade school to instruct girls in becoming draftsmen.

In one department of a company making precision instruments, the jobs have been divided into simple operations and women have been hired to perform them. This is one of the outstanding illustrations in the State of highly skilled operations being simplified so that unskilled workers can do them.

80 Girls Trained

Eighty girls are being trained on power sewing machines at Fall River under auspices of the National Youth Administration.

Insurance companies are hiring women to become claim adjusters.

Some shoe manufacturers are advertising for women as stitching room and packing room help.

In addition, in one of the oldest field of women's work, a clothing company is preparing to start a program to train girls with no previous experience in the needle trades.

A number of the women who are finding jobs in industry were formerly on the WPA. During the first two months of this year 200 women left the WPA for places in private employment.

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Defense Program Opens New Field of Employment to Women

(In Ledger, Philadelphia, Pa., April 25, 1941)

By Ellen Taussig

Among the avenues of employment for women opening out from the widening highway of national defense is the craft of cartography---or map-making.

At the Aero Service Company, in Feltonville, the only concern east of Los Angeles to manufacture two and five foot contour maps from air pictures, 20 women are now employed.

Varied Tasks.

They are operating tracing instruments, doing preliminary pencil drafting, checking computation. They are lettering, and computing ratios for determining tilts in the system of radial control used in assembling numerous pictures over a given area into one photographic map on a single scale.

Women have been employed in this concern because in its operation of an exclusive American process for the production of precise maps, if one man is drafted and a single machine in the 15 now going full tilt, is left idle, the entire defense production of the concern is bottle-necked. The process is the result of a $6,000,000 research since the last war.

Optical Requirements.

The making of maps also has definite optical requirements. While the firm figured there might be fair success with men past the draft age, these men would still have developed certain ways of using their eyes which must be overcome to see stereoscopically. The maps are done to an accuracy of 1000th to an inch.

So, in the face of bigger and better drafts, the company looked about for women between the ages of 18-21, with a trained hand, preferably art students.

Two Types of Maps

From the 15 photographing planes in operation, flying from altitudes of 26,000 feet, two leading type maps are manufactured.

The first, contour maps, determine favorable sites for the construction of army cantonments and the building of powder plants.

In the case of the erection of a powder plant, buildings must be so placed that they can be fed by gravity flow from one to another. They must be sufficiently scattered to prevent fire contagion in case of explosion. As much as 6000 acres are photographed to spot suitable locations.

Mosaic Maps.

The second type are precise mosaic maps for locating artillery ranges

Defense Program Opens New Field of Employment to Women (Cont.)

and for tactical purposes.

Owing to the growing demand for women detailers and tracers by local mechanical, electrical and topographical concerns, courses preparatory to this work are now available at two vocational schools, both by day and by night.

Women will be able to supplant drafted men in this field right up to the point where a background of mechanical engineering is essential.

(See clipping for illustrations.)

4/21/41

ON THE BUSINESS HORIZON

New Jobs for Women Workers ~~[illegible]~~

One phenomenon of the war abroad has been the extent to which European women have been recruited for jobs formerly the province of men.

Some French fighter planes were being produced entirely by women just before the Armistice, reports Frieda Miller, Industrial Commissioner of N.Y. State. One Spitfire airplane factory in England is manned 50% by women, who work with pictures of favorite movie stars on the walls.

Both in England and in Germany women work as truck drivers and railway conductors. Both countries conscript young women for work, to release available man power for the armed forces or for more highly skilled work. Despite Hitler's pre-war declarations that women belonged in the home, one-third of all German workers are women.

In the United States, where the shortage is not so much of man power as of skilled labor, women have not gone into booming defense industries and stepped into men's shoes and overalls, to the same extent. In airplane factories, for instance, they are generally used for sewing or doping airplane fabrics or for making certain inspections of engine parts. The great majority of workers are men.

Nevertheless, there was a faster increase in employment of women than men in certain industries--in electrical machinery and supplies, glass pottery, hardware and a few others--from the spring of 1939 to the spring of 1940, according to the Department of Labor's Women's Bureau. Since then, conscription of men and the tremendously increased demand for skilled men workers in defense industries has no doubt increased the demand for women workers, particularly in semi-skilled fields.

Even in a defense industry like cartridge and shell-making, women now operate punch presses, assemble primers to shells on dial presses and run machines for shell drawing cups.

The National Women's Trade Union League of America reports, "A new government munitions plant now being built not far from Cleveland expects to take on a force including some 2,500 women. At the Frankford Arsenal in Philadelphia, women are wrapping and packing shells, and working at hugh precision machines as inspectors of shell cases.

"In the Chrysler plant, women are examining metals through a spectroscope. In a large electrical manufacturing company, over a third of the employees making watt hour meters are women. In instrument factories, women are assembling parts with riveting presses, automatic screw drivers, soldering and electric spot welding. In machine tool plants, women are wrapping and winding coils. In one plant, women are found more efficient than men at driving and controlling overhead cranes. A Connecticut local of the International Association of Machinists lately reported admission of women to the union for the first time. Foot and power press operation and bench work are their chief occupations.

The number of available women workers for speeding defense production is estimated at nearly two million; and of the 373,000 women registered at employment agencies for defense industry work, three-fourths are said to have the necessary skills, according to Mary Anderson of the Women's Bureau.

It is admitted, however, that generally women lack shop training practice, blueprint reading and technical background for many defense industries. Also, women's lack of strength and stamina does not qualify them for such strenuous work as shipbuilding, which needs from 200,000 to 300,000 workers to expand to new contemplated capacity.

But certain types of work are done particularly well by women. This is the conclusion of a report on desirable standards for the employment of women in defense industries, prepared by the Women's Bureau and a committee representing eight unions. Women are excellent at work requiring care and constant alertness, good eyesight and the use of light tools such as gages and micrometers, but not at work requiring much physical exertion. They are also good at work requiring manipulative dexterity and speed. However, it's pointed out they cannot work so long as men; that they work best at jobs if seated; and that they required more safety equipment on machines. The trend toward simplification of work routines by the use of more highly automatic machines would tend to favor the employment of women in semi-skilled defense jobs.

The British experience has been that women can step into a great many occupations new to them, ranging from industrialized farming to machine tool operation to police duty. The ability of women to do work that was previously done by men has been one of the outstanding revelations of the war, it is claimed. In general, women get less money than men for the same work, ex cept in certain occupations such as bus conductors. In this field, women over 21 get the same pay as men, but there is a provision women will hold these jobs merely for the duration of the war.

Barron's April 21, 1941

OFFICE OF PRODUCTION MANAGEMENT

For release after
10 a.m. April 21, 1941

PM 297

Statement by Sidney Hillman, Associate
Director General, Office of Production
Management, before the Special Senate
Committee for the Investigation of the
National Defense Program, April 21, 1941.

When the Labor Division began its work ten months ago, it faced an unparalleled problem. The national economy was to be put to the strain of supplying, in the shortest possible time, the greatest quantities, and the highest qualities of defense materials. Many of the items called for were unfamiliar. In some cases they were entirely new and strange. Huge as were the first defense appropriations and authorizations made by Congress, they were only the prelude to further and vaster sums.

Our productive capacity was tremendous, but on top of it we now had to call into being a new defense industry. Many existing industries had to be modified. Where we had been making farm tractors, we had to make tanks. Where we had been making passenger-planes we had to make bombers. Where we had been making dynamite for normal purposes we had to make T.N.T. and gun powder for military purposes. It all meant that existing plants would have to be enlarged and changed and that entirely new mills and factories and shipyards would have to be designed and built.

And at every point in this process, there would have to be labor--qualified labor of many different kinds--to build these plants, and to use the tools and operate the machinery for turning out the guns, tanks, planes, and ships for defense.

The central task of the Labor Division, first in the National Defense Advisory Commission and now in the Office of Production Management, is simple enough to state. It has been--and remains--the task of seeing to it that that labor is provided when and where it may be needed in all parts of the country. Just as new commodities had to be produced, old skills had to be readapted or new skills developed. In normal times this adjustment of labor to new industrial conditions takes place so gradually and naturally that it all seems automatic. Here it could not be automatic--we could not leave the human factor in defense production to chance. By purposeful planning, we had to match our multi-billion dollar defense industry with the multi-million man-hours necessary to make it function.

You previously have had described to you, I believe, the task of calling into use our great potential industrial capacity. Our job--which is the other side of that coin--is calling into use our great potential _labor_ capacity. All too few people realize the scope and magnitude of this problem. Let me indicate it to you by a few figures.

The Army and Navy so far have placed contracts for $2,400,000,000 worth of planes, engines and parts. More than 15,000 planes must be delivered by October 31, 1941, with an even greater number to follow within the next twelve months. When the job began, in June 1940, only 117,000 workers were employed by the final assemblers of airplanes, engines and propellers.

On January first, this year, the number had risen to 185,000, an increase of 58 per cent. Today, 220,000 workers are employed, an increase of 90 per cent. And in order to deliver the 15,000 planes by October 31, there must be more than three times the number originally employed. This means that we must still provide within the next 7 months 170,000 workers for the airplane industry in addition to the 103,000 already added. And they all must be qualified workers.

As Secretary Knox indicated to your committee last week, our shipbuilding industry for years was virtually at a standstill. Our schedule calls for the building of 1,120 naval and mercantile vessels, of which 266 are to be delivered by December 1941. Today our shipbuilding industry, both governmental and private, is employing 251,000 workers. Within the next 18 months we must provide 309,000 more, so that the total will be 561,000.

The machine tool industry often has been called the major bottleneck. This, you know, is the primary operation of all in our modern mechanized industry. The new assembly lines basic to modern mass production cannot be installed until after the machine tool industry has done its job. The work which this industry requires is supremely skilled. After a long period in which very little new plant capacity was being provided, the machine tool industry was at a low ebb of man-power. From 1930 to 1938 it used on the average only 28,000 workers. By February of this year it was employing 85,000, which was a threefold increase. Before December of this year it must have 101,000 workers. This presents an acute problem in this field, for only the highest craftsmanship can translate the blue prints of engineers into one ten-thousandths of an inch precision.

All such demands for highly skilled labor are occurring at once. And thus it goes through all the basic defense industries and in related industries besides, in greater or less degree.

Let me break down this problem by regions.

In the Boston area construction contracts for defense let up to March 1. of this year will require 358 million man hours of work for their completion. 347 millon of these man hours must go into construction of ships. The total is equal to a full year's employment for 179,000 men.

In the Kansas City and the St. Louis areas the total man hours required for meeting building requirements of the War and Navy and other departments will exceed 12 million.

In the Minneapolis-St.Paul area the total man hours will exceed 2 million and will be devoted to building construction both for the Army and the Navy.

In the Philadelphia-Camden area where shipbuilding is the most important of the defense industries, more than a half a billion man hours will be required — a total equal to a full year's employment for 250,000 men.

The Seattle-Tacoma section of the country will require 103 million man hours of work equal to a year's employment for 52,000 men. 93 million man hours will be required for shipbuilding and 10 million for other types of construction for the Army and Navy.

Taking the south as a whole, approximately 610 million man hours or slightly less than 25% of the total required for our construction activities for the country as a whole will be needed. Of this amount 407 million will be in ship construction.

We of the Labor Division sought to ascertain — in advance — what this national demand for skill was going to be. With the very first awarding of defense contracts, we had economic and industrial engineering experts busy analyzing them to find out precisely what numbers and kinds of workers each individual contract would require — and when and where.

We resolved to get ahead of the demand and keep there as long as the defense emergency should last. To carry out this resolve, we had to recognize realistically two conditions that then prevailed.

The nation was emerging from a period in which a great deal of its former asset of labor-skill had become rusty or lost. One-time skilled mechanics were trying to make their livings in service stations and behind counters. During the depression a new generation had risen without acquiring the normal measure of trade skill, and certainly without normal experience in industry.

Moreover, industrial production had been rising for some time. It had reached in June of 1940 a level of 115, or 5 percent higher than in 1929. This meant that industry, in large part unrelated to defense, had already reabsorbed a considerable quota of the existing skill. We had then to meet the sudden, ever-enlarging needs of defense industry for skill, and yet more skill. We had to do it when usual sources of supply had been already tapped. We had to do it also within a time limit daily shortened by the stringency of the emergency. Time--time was of the essence of our effort.

In view of this situation it is gratifying to report to you that more than two million workers have already been placed in industry as a direct or indirect result of the defense program.

No serious situation has yet developed in which there was an urgent need of workers that was not fulfilled. So far, our primary responsibility of providing the man-power for defense production has been for the most part successfully met. And that is why you read of great new plants, air-training stations, and ship ways being completed ahead of schedule.

It may assist your inquiry to know how this has been done. First and foremost, it has been done by the cooperation of labor itself. One of my first steps, on becoming a member of the National Defense Advisory Commission, was to appoint a Labor Policy Advisory Committee, consisting of 16 leading officials of the American Federation of Labor, the Congress of Industrial Organizations, and the Railway Brotherhoods. It made a unanimous pledge of "full and unstinting" support of the defense program. This pledge of cooperation was recently reaffirmed. I want to say that at no time have I called upon the men of this Labor Policy Advisory Committee without receiving their constructive response. Among the basic policies of this committee---I quote--is the following:

"Labor recognizes fully that if the democratic way of life is to be preserved, and enlarged, our country must prepare itself for total defense--morally and materially. Labor knows that it is the first to be trampled under the march of dictatorship. Labor knows that if workers are to remain free men, and keep their free choices, democracy. . . . must be equipped to meet the threat of totalitarianism, within and without. Labor has been--and is--cooperating whole-heartedly throughout the entire defense effort."

Directing its attention to the mobilization of man power, the Labor Division coordinated six governmental agencies, namely the U. S. Employment Service, the Civil Service Commission, the U. S. Office of Education, the Work Projects Administration, the National Youth Administration, and the Federal Committee on Apprenticeship. The U. S. Employment Service, through its 1500 offices, proceeded to compile a register of 5,700,000 unemployed people, subdivided by communities and by their various skills and degrees of skill. The trades unions prepared their own inventories of their unemployed members, and also of their members employed in unskilled or semi-skilled callings, who had in the past performed more expert types of work. In this way, by pooling all such surveys of man-power, we inventoried and analyzed the nation's storehouse of labor skill. We now know what labor resources might be drawn upon for the work of defense in every section of the United States.

The assembling of this data was only the beginning of our task. We still confronted the need for more and more skill of special types. We therefore undertook a far-flung and comprehensive program of labor training--a program geared to the specific needs of defense production.

In the first place, the six government agencies I have mentioned combined their resources to accomplish this purpose. The idea of refresher courses for workers whose skill needed restoring or modernizing was promoted through the vocational schools, and took hold at once. The pre-employment courses for new workers crowded the classrooms. At this time we have this movement going forward in 47 States, three territories and the District of Columbia, and by the latest figures 816,000 people of both sexes and all ages were profiting by these courses. And a high percentage of those who have completed the courses are employed in defense jobs where this training is used. By midsummer the attendance will have reached a million.

The United States today is building a greater asset of skill than ever before and is doing it by the cooperation of all groups. Workers from the unions, executives from industry, foremen from the shops, and local committees of employers, educators and labor leaders, have pooled their knowledge and experience to aid this training work--to devise the methods, administer the courses of instruction, and furnish the mechanical equipment. This program is not only building skill, it is building cooperation.

Let me cite a typical example of how these courses fit workers into defense occupations. The Murray Corporation of America, in Detroit, recently asked the vocational schools of that city to train 6,000 workers in aircraft construction trades, for employment with that corporation during the next few months. Labor, management and the school groups united to set up the required courses. At the present moment 1700 future workers are being qualified, the classrooms being active on a three-shift basis, 24 hours a day. By September 1, these special classes will have provided some 80 per cent of the 6,000 workers required by the Murray Corporation to meet its defense contracts. And these will be resident workers, the importation and dislocation of the labor supply being avoided by means of this local instruction. The Murray experience merely typifies what is going on in hundreds of communities throughout the country.

The actual training which a worker gets on the job, in the plant, is — of course — acknowledged to be the best. During the depression, this idea of in-plant training had been quite generally allowed to lapse. It was necessary to revive it, not only because of its superiority, but because speed was essential. There were, for example, very few skilled lens-grinders in the entire country, capable of grinding lenses such as would be needed in quantity for range-finders. At one of the government arsenals, a study made early in the program showed that it was possible to break that bottleneck within the available time only by dividing the task into several operations and by teaching each operation separately, thus reducing the time of training from several years to a few months. I could cite other examples no less important.

It was to overcome this kind of problem, that the Labor Division set-up its Training-within-Industry section. It is under the direction of training specialists borrowed from leading industries.

This Section is assisted by six advisors from organized labor and six from management. To carry out the program, the nation has now been divided into 22 regions, with a Training-within-Industry district representative in each. Each of these is an expert in his field and is approved and advised jointly by labor and from management in his territory. In addition, every district representative will have the assistance of a panel of 10 or more personnel and training consultants borrowed from industry and available to help defense plants install training programs. When the schedule gets into full operation, there will be from 300 to 400 such aid on call.

This method of upgrading skills through Training-within-Industry is also being integrated into the training policy of government services. The Secretary of the Navy lately directed all naval inspectors to spread the knowledge of training-within-industry techniques as formulated by the Labor Division throughout the navy yards. Naval contractors are also taking it up, and a specialist has been assigned to advise the private shipyards of the Pacific Coast on how to install this training. And among the important byproducts of this "on-the-job" program, as with other activities of the Labor Division, is the growing sense of mutual understanding and collaboration between management and labor deriving from their close association in this enterprise.

May I point out, parenthetically, that one of the obstacles to the widespread adoption of training-within-industry has been the attitude of some employers who, through the depression years became accustomed to procuring their labor merely by pushing a button or sending a messenger out to the gates. The requirements of the defense program have shown up sharply the inadequacy of such methods. We must not only educate workers on the job, but educate employers to the need for training. The system is spreading rapidly, however. The end of the haphazard days of obtaining labor has arrived--at least for this emergency.

Let me at this point emphasize that in our entire attack upon our problem, I have considered it of the first importance that idle labor and idle facilities should be used where they are as fully as possible. For that reason, defense labor should be drawn from the home market. We have not, of course, been able to eliminate all migration of labor from the picture. But the fact remains that there has been no such wholesale displacement of workers from their homes, their families and their surroundings, as there was during the World War. The Labor Division has consistently urged that the Federal employment offices, the unions, and the employers themselves, tell the worker not to go job-seeking to distant points; if his type of skill is needed away from his home, he will be called. The training of the local worker for local employment avoids a host of economic and social troubles connected with migration, such as housing shortages, congestion, higher costs and delay.

In order to utilize local labor most effectively and to head off unnecessary migration of labor we actively participate in a Plant Site Committee. It works in close cooperation with the Plant Site Boards of the Army and Navy. This Committee on Sites reviews the locations proposed by other government agencies, for example by the Army and Navy, for new defense plants or expansions. Its work, among other things, is to determine whether a labor supply is available at or near the given site; and in this connection the Division has collected detailed information bearing on approximately 150 new plant or plant-expansion sites suggested by the War and Navy Departments. In some cases these labor surveys have resulted in changes of proposed locations by the contracting departments. In one typical case, the War Department planned to place a large shell-loading plant in a certain mid-Western city. On investigation, the Labor Division learned that labor must be imported and that there was no housing to care for these prospective workers. Skilled men would have had to travel between 120 and 140 milles every day to reach the job. As a result, the site was relocated and the plant built in a community where workers are available within normal distances.

Nevertheless, there has had to be some transplantation of labor, expecially where military considerations required it. And where this has occured, we have the cooperation of labor very largely to thank for the fact that the migration process has been held under control. In the case of many Army cantonments and Naval air training stations and munitions plants, throughout the country, scores of thousands of skilled workers were supplied by unions, at no expense to the government, to make possible the rapid completion of these projects.

Now let us take a look at the problem of strikes. We must recognize that most American labor unions and most American employers share the credit for the unusually small number of strikes over the past 12 months. There are hundreds of collective bargaining agreements in existence, providing for the adjustment of management-labor differences, and these operate continually and are regularly renewed without any interruptions of production. The great preponderance of industrial disputes are, of course, settled without any work stoppage.

Just the other day, for example, a threatened strike arising from a dispute between the Minneapolis Moline Power Implement Company and the CIO's United Electrical and Radio Machine Workers of America was certified to the National Defense Mediation Board. But while traveling toward Washington to meet with the board, representatives of management and the union began talking on the train, continued their conversation in a hotel, settled the points at issue and then jointly chartered a sight-seeing bus for a tour of the capitol's points of interest. Despite the fact that a Board panel was ready and waiting to hear this case, its services did not become necessary. Meantime the plant was kept in continuous operation.

In spite of the tremendous expansion of industry that has occurred, strikes are becoming less rather than more numerous. And they are of shorter and shorter duration. At the present time, outside of coal, there are only about 15,000 workers on strike in the whole range of national defense.

This may be regarded as remarkable, for it is a well-established fact that increases in industrial activity are regularly marked by increases in work stoppages through industrial disputes. The growth of defense industry has brought with it many factors of stress and strain which, under ordinary circumstances, might well give rise to labor disputes--factors of labor turnover, adjustments of new personnel to new conditions, and other common causes of disharmony.

The Labor Division places its emphasis upon the necessity for continuous production. From the outset, it has had its own labor relations staff, including both industrial and labor advisors, collaborating closely with the U. S. Conciliation service, to prevent work stoppages and to adjust differences between management and labor.

With the rapid growth of defense industries, we recognized that there was need for a board along the same lines as the Taft-Walsh Board of the World War. Accordingly, together with other agencies of the government, we recommended the creation of the present National Defense Mediation Board. This Board, as you know, came into existence a few weeks ago and eleven cases have been certified to it. It has heard ten of them, and in nine cases production has been resumed. This Board has dealt with some of the more aggravated situations.

Let us remember that many elements enter into an honest and fair appraisal of any strike situation. It is not a reasonable assumption that a work stoppage is necessarily the fault of labor. As I said to the American Society of Newspaper Editors last week: when large profits are reported in the press, labor justly feels it is entitled to some fair share of them. When labor is denied various rights guaranteed to it by law, labor cannot be expected to sit by without protest. The mere fact that a picket line is more dramatic than a decision of the Board of Directors does not relieve us of the obligation for clear and fair analysis.

One of the principal reasons for the existing state of affairs between labor and management, which by and large is harmonious, is the rapid increase in recent years in the number of collective bargaining agreements in American industry. This has been especially true in industries today concerned with national defense.

I now wish to refer, in this connection, to an accomplishment worthy of special consideration. I refer to the stabilization program for the all-important industry of shipbuilding, designed to keep it at peak production for the duration of the emergency. On November 27 last, we established within the Labor Division the Shipbuilding Stabilization Committee. Its membership comprises shipyard employers on the East Coast, Great Lakes, Gulf and West Coast; representatives from the AF of L and CIO unions whose members are employed in the shipyards; and the U. S. Navy and Maritime Commission. This Committee sponsored a conference covering all private shipyards on the Pacific Coast, which are now working on $667,000,000 worth of defense orders.

The purpose of the conference was to fashion a uniform agreement covering all essentials of production and employment relations. On April 11 the Navy and the Maritime Commission together with the OPM approved this agreement. It provided a basic hourly wage for skilled mechanics and was adopted for the entire coast. It further provides for a six-day, 48-hour week. The agreement also provides for no strikes, no lockouts and no restrictions upon production for settling disputes without work stoppages, for the period of the emergency. Here is certainly one of the most advanced labor-management group agreements ever entered into. It may well serve as a model, not only for other shipbuilding zones, but for other industries.

In all our activities, whether in training workers for new jobs or in dealing with industrial relations, we have adhered strictly to a course of voluntary cooperation and sympathetic teamwork. No compulsion has been practiced; no regimentation has been applied. We have depended on the self-imposed voluntary discipline of free men--not only because it is the way of freedom but because it insures the highest possible achievement in both material and moral terms.

The defense emergency, to sum up, is teaching us valuable lessons. It is giving us a new cooperation between government, management and labor. In everything the Labor Division has done, this striving for a three-fold harmony has been present at every step. We are getting results, accordingly, not only in the colossal job of production but also in the fundamental matter of preserving and energizing our democracy.

SPEECH OF MRS. HENRY A. INGRAHAM, PRESIDENT OF THE Y. W. C. A.
AT THE U. S. O. MEETING IN THE WILLARD HOTEL, WASHINGTON, D. C.
APRIL 17, 1941.

* * * * * * * * *

National defense calls upon us as individuals and as organizations to give our best. It has many aspects and we must choose where and how to serve.

Many families and therefore many communities are being greatly affected by the defense program and the Y.W.C.A. chooses to serve where the women and girls in very great numbers are making most difficult adjustments and need understanding, guidance and sympathetic leadership.

This choice will have a direct effect upon the morale of the men in training camps and concentrated defense industrial areas, for sons have mothers and sisters and men have wives and sweethearts and they care what happens to them!

There is real unity of purpose in the United Service Organizations and as the Y.W.C.A. undertakes to carry its special services for women and girls, its courage is reenforced by the enthusiastically accepted provision in the U.S.O. program that it will be free to use its long experience and accepted philosophy of ways of work in doing its job.

Girls and women in increasing numbers are entering industry, driving and controlling overhead cranes in instrument factories, testing small parts in airplane plants, working at precision machines in arsenals. Many work overtime.

All workers, especially weary workers need accessible healthy recreation. This we shall give.

There are thousands of girls and women seeking employment. Many are now being trained all over this country for defense industries. Some will secure employment, others will fail to make good. The Y.W.C.A. must be near those who become discouraged.

There is evidence of increasing restlessness and useless migration among girl job seekers. Untrained girls, many of them very young, fourteen and fifteen years of age, are taking jobs as waitresses in road houses and eating places near training camps, and defense plants.

Continuous appeals are coming to us from Army and Navy men, social workers a others to come and advise these young girls for neither their families nor the co munities can provide adequate safeguards or help. The Y.W.C.A. is surely needed at these centers.

Speaking of safeguards. What happens to young people who are refused work because they are Negroes or members of nationality groups against whom today some people have special antipathy? These young people know that there are jobs and feel confident they could do the work if given the chance.

What happens is serious. Good American young people are being hurt and becoming bitter, and they are finding it hard to appreciate the advantages of a democracy.

They become susceptible to dangerous anti-democratic propaganda. Organizations such as the Y.W.C.A. - in fact all of us - know that our Government stands for freedom and justice - and therefore we shall help to sustain America's home defenses by helping to overcome injustice and thereby strengthening our country's morale.

The interdependence of freedom and justice and morale must be recognized by all of us.

The Y.W.C.A. has great faith in this country and women and girls everywhere will unite to help to build a better world.

DE - 4/18/41

(Mrs. Henry A.) Mary S. Ingraham

(NOT FOR RELEASE BEFORE THURSDAY, APRIL 17, 1941)

WOMEN IN DEFENSE

Each Day Finds an Ever-Increasing Number of Women Doing Man-Sized Jobs in Defense Industry

★ 1941 has dealt the sewing circle a severe blow. For with United States industry calling unceasingly for skilled workers to augment its ranks, thousands upon thousands of qualified women have responded. Employment refuses to stand still long enongh to allow the making of a detailed survey, but reports from individual plants scattered along the Nation's industrial front indicate that during the past 6 months employment of women by defense industry has increased from twofold to fourfold.

★ Today a roster of the types of jobs held by women reads like an inventory of industry itself. In factories throughout the country skilled women workers are winding coils, assembling airplane engines, inspecting parts and instruments, operating milling machines, radial drills, turret lathes and drill presses. Everywhere, filling gaps in the ranks of skilled labor, are women crane operators, women welders, women flame cutters, women toolmakers—women everything.

★ The Women's Bureau of the United States Department of Labor, which has had long experience with women in industrial employment, reports that women perform certain types of work particularly well. They excel in tasks requiring care and constant alertness, good eyesight, and the use of light instruments such as gages, micrometers, and calipers. These are characteristics of such jobs as inspection of castings, machinings, and finished parts, of routine powder analysis; of testing electrical equipment.

★ Women are expected to constitute half the work force in 10 new munitions plants currently being constructed.

The pictures on this page show women at work gaging and weighing cartridges (upper left), assembling field glasses (center), and assembling clip springs for .30 caliber cartridges (below) at the Frankford Arsenal in Philadelphia, Pa.

O. E. M. DEFENSE PHOTOS BY PALMER

Editors: Three column mats (65 line) of this page and gloss prints are available to publications on request.

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Memorandum to Editors:

This special section is being added to copies of DEFENSE which are sent to publications.

It contains material on the defense program not heretofore released for general publication. This material may be used as presented here or in such other forms as editors may find desirable.

Please note the release dates marked at the top of each unit.

Three-column mats and prints are available at this office to those publications desiring them.

ROBERT W. HORTON,
Director of Information,
Office for Emergency Management,
Washington, D. C.

(NOT FOR RELEASE
BEFORE THURSDAY,
APRIL 17, 1941)

RAW MATERIALS AND JOHN SMITH, CITIZEN

(This article, dealing with plastics, is the second in a series on important raw materials and their meaning to the National Defense effort.)

★

The story of plastics is complicated or simple, depending on how you look at it.

Complicated example: That astonishing, 33-letter word, *oxybenzylmethyleneglycolanhydride*, which is the name of the stuff used to make those shiny telephone handsets.

Simple example: The jingle by Edward Mabley:

The time has come, the chemist said
To talk of many things;
Of poker chips, umbrella tips,
And combs and teething rings.
Of minnow traps and bottle caps
And toys and buttonhooks,
Of banjo picks and magic tricks
And clasps on pocketbooks.
Of blotter tops, electric clocks,
The number is fantastic;
And all these things the chemist brings
Into the world with plastic.

But complicated or simple, it is a safe bet that the near future will bring more and more talk about plastics, more thinking about what people can do with plastics, and what plastics can do for people. On top of the industry's leaping growth during the last quarter of a century, much of it during the depression thirties, the needs of the national defense program and shortages in certain vital metals have now put the plastics industry in center-stage position.

A PLASTIC DAY

Metal-using industries on the one hand—for example, automobiles—have turned their scientists loose on the job of developing more plastic substitutes. And the plastic makers, on the other, have launched efforts to produce new plastics with all the chemical and physical characteristics necessary for broad uses in objects ranging from prosaic but utilitarian objects, like washing machines, to primary defense weapons, like airplanes.

Behind them, as their new program takes shape, the plastic makers have an enviable record. Already you can live your day with plastics, from the plastic tooth brush in the morning (bristles as well as handle) to the plastic light switch you flick off at night while squeezing out a final cigarette in a plastic ash tray.

Your automobile may contain as many as 200 plastic parts (there are more coming), and plastic is probably the word for your fountain pen, automatic pencils, comb, playing cards, spectacle frames, radio case and book ends. Your wife can clothe herself in gay, colorful, and durable plastics from head to toe.

U. S. LEADS WORLD

That, of course, is not the whole story. Plastics are by no means limited to the home; they have spread just as widely in plant and factory. It is said that the industrial use of plastics, as in machinery parts and electrical equipment, now represents as much as 50 percent of total United States production.

Production? It is big. During the 5 years from 1935 to 1940, the plastics industry doubled in size, a record unequalled by any other major industry. The United States leads the world in plastic tonnage and, in 1940, turned out over 250,000,000 pounds worth more than $500,000,000 in finished products.

These figures seem even more impressive when it is remembered that the plastic makers think they are just getting under way. The plastic-molding industry boasts more than 600 plants, equipped with more than 13,000 presses, and people familiar with the industry would not be surprised if these figures were to double again in the next few years.

CHEMICAL MAGIC

But while the index figures are going up, it would be a good idea if somebody paused long enough to invent a good definition of a plastic. Almost everybody knows a plastic when he sees it; almost nobody can define it.

For example: "Something that can be made to flow into a given shape, usually under heat, and then keep that shape," is only a wild stab in the dark. A lot of things will flow under heat and harden with cold—glass, glue, and gum, for instance, none of them a "plastic" in the modern sense. All the same, the "flow and hardening" idea is basic.

Definitions or no definitions, there are a few definite points that can be made about modern plastics. Fundamentally all of them are the products of the magic of chemistry. They come from such organic material as coal and coal tar and the cellulose content of wood, or from casein in milk.

BUTTONS FROM MILK

What actually happens, in the simplest possible description, is that chemists take these basic materials, treat them with chemicals, add "plasticizers," and wind up with a plastic, perhaps a raw material, like plastic powder, perhaps a finished product, like a button or buckle.

F. F. P.

Some people would say that the First Family of Plastics was papier mâché, known to the Chinese thousands of years ago, but the main credit for the modern plastic as we know it goes to John Wesley Hyatt. It was in 1869 that Hyatt, an American, fiddling around with cotton and nitric acid, turned up with a discovery that led directly to the founding of the Celluloid Manufacturing Co., in 1871.

Then about 20 years later, in Germany, Dr. Adolph Spitteler, trying to make a white "blackboard," treated sour milk with formaldehyde and got a glossy, hornlike substance that is now regarded as the first protein plastic and the granddaddy of many a modern gadget.

THINGS ARE NOT WHAT THEY SEEM

Since those early efforts, chemists have learned a lot about how to make beautiful and useful things out of coal and water and air. There is no space here to list them all, but some of the basic types of plastics are cellulose nitrate (brush handles), shellac plastic (phonograph records), bitumen (electric-light plugs), phenol-formaldehyde resin (electrical insulation), casein (beads, buttons, buckles), and cellulose acetate (automobile fittings).

And there are lots of others. One of the things the plastics people are proud of is the record of inventing one new plastic a year for quite a few years. The big push recently has come in the synthetic resin plastics which come largely from coal tar sources.

One of the useful ways of classifying plastics is to divide them into the thermosetting types and the thermoplastic types. A thermoplastic flows into shape under heat, hardens with cold, but will remain relatively unstable and melt again under high temperatures. A thermosetting plastic, however, once set, cannot be melted again and remains hard and tough—like the distributor head under the hood of your car.

PEOPLE IN PLASTIC HOUSES SHOULD NOT THROW ATOM SMASHERS

The methods of preparing all these plastics for the market are almost as various as the types. Here, however, are two typical methods.

1. Plastic powder is put into a mold, subjected to heat, softened, pressed into the desired shape, and then released. This is a typical method for thermosetting plastics.

2. Plastic liquefied under heat and pressure is "shot" into a cold mold, where it instantly hardens and comes out in the form of combs, book ends, or pot handles. And this is a typical method for thermoplastics.

If the plastics field sounds pretty technical, and it usually does when they begin talking about alkyds and vinyls and such things, the average citizen can take solace in one fact: the chemists are just as baffled as he, in a slightly different way and on a different level.

For the chemists, despite their skill, are still faced with a lot of big problems—plastic airplanes, for example, and plastic automobiles and plastic houses—none of them accomplished facts as yet. That, however, does not discourage the chemists. They are optimistic. And in the light of their record, they have a right to be.

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Appendix 6.

U. S. DEPARTMENT OF LABOR
WOMEN'S BUREAU
Washington

April 1, 1941

II. STANDARDS AND POLICIES RECOMMENDED BY THE WOMEN'S BUREAU FOR WOMEN ON NIGHT WORK

Whenever individual plants with defense contracts claim that night work by women is essential to speed up production and the War Department is so notified, and in turn notifies the Women's Bureau, the latter will immediately analyze each situation, especially where there might be a relaxing in State legislation pertaining to such employment, to make sure that no other motive than the defense situation is responsible and to prevent any unnecessary night employment of women.

Where permission to do night work is granted this should not be State-wide but should apply only to those individual firms that prove the need for such employment and only for duration of the defense contract. The State department of labor and all other forces concerned with allowing night work by women should do everything possible to offset or minimize its harmful effects.

Special attention should be given to age, by refusing to employ on night work girls of less than 21 years.

Special effort should be made by all forces concerned to insure for women on night work the standards of employment recommended by the Women's Bureau in its Special Bul. No. 1, "Effective Industrial Use of Women in the Defense Program".

Ample supervision should be given by plant management to guarantee to women on night work the following working conditions:

Hours of work not to exceed 8 a night.

One night of rest in seven.

A half-hour meal period with opportunity for a hot nourishing meal.

Best possible lighting and ventilation arrangements in accordance with latest scientific developments.

Special effort to prevent, wherever feasible, either constant standing or constant sitting, by providing seats adjusted to the worker and the work.

Increased safety precautions, as night work is more conducive than day work to accidents.

Adequate first-aid facilities and medical department.

Supervision of work as adequate as on the day shift.

Adequate and conveniently located washing, drinking, and toilet facilities.

Adequately equipped and staffed lunch room, dressing room, and rest room.

Even more careful supervision than on the day shift of women workers, from the viewpoint of personnel policies, by a competent employment executive, preferably a well-qualified woman.

The management in plants where women are employed at night should request transportation companies in the locality to guarantee adequate transportation facilities for the women in regard to going to and coming from work, particularly in connection with times for change of shifts. A survey should be made by the plant management to find out where workers are living. Transportation facilities should be adequate so as to prevent women from being subjected to inconvenience, such as loss of time from waiting for conveyances or walking considerable distances.

Appendix h

July, 1941, Woman Worker

MORE WOMEN PLACED IN DEFENSE JOBS

Defense jobs have called women to many tasks. These range from nursing, operating power sewing machines, or dietetic work, to assembling gas masks and doing fine precision work for airplane instruments. Two questions asked repeatedly cannot be fully answered, though some indications can be given: One, How many women are being added to defense employment? the other, What new jobs are women doing?

There is no basis for arriving at the full numerical increase in woman employment, though the increases can be told for important scattered plants - too small a sample for a complete estimate. In fact, even the full increase during World War I is not known, though in a large sample of war implement and war instrument industries investigated by the Women's Bureau women employees more than doubled in number from 1916 to 1918.

Defense Placements of Women Increase.

Total placements of women by public employment offices were declining in the early months of 1941, but women finding jobs in manufacturing were increasing somewhat. The Bureau of Employment Security makes special tabulations of placements in some 400 defense occupations, but only about 1 percent of all women's placements are in these jobs. However, such placements were more than three times as great in the early months of 1941 as in the late months of 1940.

Numbers of Women in Defense Jobs.

There are at least four sources of data on number of women employed, but none can give the complete picture as to how many are in defense jobs. Of course the number changes daily.

1. Census data by industry, when they become available, will show how many women worked in the spring of 1940 in industries that later developed defense production. The number since added to these is unknown, and the situation is constantly changing.

2. Reports of placements in defense jobs show only those made by public employment agencies, and there is no complete information on numbers hired at plant gates.

3. Indexes of employment trends are made from questionnaires sent out to employers. These are published, by sex, twice a year by the United States Department of Labor. They are the best available indications of the trend, but they are samples based on particular States and industries and hence show only the movement of employment and not the complete numbers.

4. Finally, there are scattered reports for important particular plants. These are based on occasional special investigations, and show nothing as to complete numbers except for those plants at the time investigated. However, they are very interesting and they indicate the situation. (See WOMAN WORKER, May 1941.)

Types of Work Women Are Doing.

Women's delicate workmanship and skill are a boon to defense operations, but the great numbers employed are in much the same kinds of factory work long done by women. Reports that women are driving taxis, or tending filling stations, do not mean the absorption of great numbers in such occupations. Where women are in jobs unusual for them they are relatively few, and in most cases have specialized experience or aptitude for the work.

Of women's placements in early 1941 in defense occupations listed by the Employment Service, 60 percent were in textile mills, most of them as yarn winders, frame spinners, weavers, slubbers, and throwers - traditional employments for women. Some were in electrical plants, as radio assemblers, or armature winders. A few were in less usual jobs, such as work at engine lathes, milling machines, or as core makers, spot welders, or airplane coverers. Women are proficient at inspecting cartridges and polishing small parts for rifles, and in one plant they are reported as assembling, shaping, sharpening, testing, and chrome plating bandage shears for government use. Women work in rubber factories on the bullet-proof gas tanks - rubber lined and covered - so vital to life in aircraft, but here again the actual process is not unusual for women. They work also on silk parachutes, but the jobs consist of skilled cutting and sewing.

Women's Work on Airplane Parts.

In airplane assembly factories women constitute a very small part of the productive labor force, probably only a fraction of 1 percent, and their chief work is sewing. Of course, many do the usual types of clerical work in the plant offices. Reports of any appreciable number of women in "Aircraft plants" refer chiefly to the places making the parts and accessories for planes. Women are especially good at certain processes on airplane instruments, primarily the same types of work women long have done in electrical or other plants, such as coil winding, bench work, inspection, or assembly of delicate parts.

In assembly factories, the force of women could be considerably increased. One of the predominating jobs in the assembly of a plane is riveting, with its concomitant processes of drilling, counter-sinking, dimpling, and buckling. A large part of this work, though not all of it, might be done by women after a little training.

Much of the bench work on the simpler subassemblies could be done by women, and the skills required do not differ materially from those of women in many other industries. Women could do at least one-fourth of the inspecting, and in case of shortage of male workers considerably more. This refers to inspection of the parts, not to the floor inspection of the assembling of the plane. Inspectors usually advance after plant experience, and to do this work women would need considerably more experience than they have had.

EXCERPTS FROM
LETTER OF J. W. STUDEBAKER, U. S. COMMISSIONER OF EDUCATION
February 21, 1941

(sent to all executive officers
in the Defense Program of
Vocational education)

As the number of employable men in the nation decreasesand as defense industries continue to expand and call for larger numbers of women to fill jobs for which they are especially fitted, more and more women will need either supplementary or refresher vocational training.

While the supply of men to be trained under the vocational division of the National Defense Training Program is not yet exhausted it is well to study women's place in industry and prepare for their role in this national emergency. As additional men are called for selective service and as industry absorbs the supply of employable men now being trained in the program, thousands of women will be called upon for types of defense industry work for which they are fitted. . . .

I suggest that in your local planning for defense education and in your advisory committee meetings you take these facts into consideration and find the vocational niches that women can fill now or in the future as the preparedness program expands.

Appendix 2

ADVISORY COMMISSION TO THE COUNCIL OF NATIONAL DEFENSE

Federal Reserve Building

Washington, D. C.

Labor Division
"Training within Industry"

General Policy Letter #6
January 7, 1941

To All District Representatives:

WOMEN IN INDUSTRY

More and more women will be employed in this emergency. This question is dealt with in detail by the Women's Bureau of the United States Department of Labor. We are attaching copies of a list of occupations and skills which the Women's Bureau believes women are capable of performing in defense industries and a statement setting forth a general description of the types of training deemed essential.

Do you think the time has arrived when you should consider the appointment of a woman or women as members of your panel or use them in some other advisory way?

C. R. Dooley, Director
Training within Industry

Attachment - 2

Appendix A

STATES NOT PERMITTING OVERTIME

17 States and D.C. have inflexible laws on daily and weekly hours of work for women in manufacturing:

1/ Arizona
1/ California
D.C.
1/ Idaho
Kentucky
1/ Louisiana

1/ Maryland
1/ Missouri
Montana
Nebraska
1/ New Jersey
1/ North Carolina

Ohio
Oklahoma
1/ Tennessee
1/ Utah
1/ Washington
1/ Virginia

1/ Canneries exempted or covered under separate law

7 States allow relaxing of daily hours under certain circumstances but are inflexible as to weekly hours for women in manufacturing:

*/ 1/ Delaware
*/ 1/ Illinois
*/ 2/ Maine

3/ Georgia
*/ Michigan
*/ 4/ New York
5/ Rhode Island

1/ daily overtime limited to one day in the week
2/ daily overtime permitted to make one short day
3/ cotton and woolen manufacturing only
4/ if one short day of 4½ hrs., 10 hrs. permitted on one day and 9 hrs. on other days
5/ daily overtime permitted to make a 5-day week
*/ canneries exempted or covered under separate law

OUTLINE OF SUBJECTS COVERED IN WOMEN'S BUREAU FIELD SURVEYS OF WAR INDUSTRIES

Surveys completed and published.

Detailed occupational studies made in the plant, of the jobs women were doing and the additional jobs on which they might be employed in the following industries:

1. Aircraft assembly plants
2. Instrument plants - aircraft, optical and fire-control, surgical, and dental
3. Artillery ammunition plants
4. Small arms ammunition plants

Surveys Now in Progress

I. War Plants -

The following data are now being collected in aircraft assembly plants, small arms ammunition, and in shell and bag-loading plants in rural communities:

1. Product - prior to defense, defense product, and plans for post defense
2. Labor supply - (men and women)

    Source of labor-prior to defense, present, and plans for future labor supply
    Transportation facilities and problems
    Method of recruiting and hiring
    Requirements - age, sex, marital status, race, experience, etc.
    Present turnover

3. Numbers employed - plant and office employees by sex

    Normal force in 1940
    Present force
    Anticipated force

4. Occupations in which women are employed
5. Hours of work - by sex

    Scheduled daily and weekly hours, and number of days per week
    Length of lunch period, rest period
    Extent of overtime

6. Wage data

   For plant operatives
   - Minimum hourly rate for men and women
   - Maximum and prevailing hourly rate for women operatives
   - Wage advancement policy
   - Differential for night work
   - Special rates for hazardous work

   For office workers - beginning and prevailing rate for women office workers

7. Training - pre-employment, supplementary, within plant, and upgrading

8. Personnel policies - medical, food service, uniforms for women workers

9. Employee organization

In the rural areas, supplementary information is also being gathered on the community situation. This covers the housing need, eating facilities, recreation and other welfare problems.

II. Labor Supply -

A survey in cooperation with the Federal Employment Service to determine the present future and labor needs for women in well developed areas is now being carried on in Massachusetts, Connecticut, and Pennsylvania.

Present Labor Force and Estimated Required Man Power

Labor Force - Dec. 1941

(In millions of persons)

	Total	Men	Women
Employment	49.5	37.0	12.5
Unemployment	3.8 1/	2.6	1.2

1/ Includes an estimated 1½ million on emergency pay roll and N.Y.A. students and also an estimated 800,000 are unemployable

Present force of war workers - (war workers are additional persons who have been required at all stages of production to meet war needs)

Total	5,000,000
Women	500,000

Estimated future need of war workers

By July 1, 1942 -	Total	10 million
By December 31, 1942 -	"	15 "
In first half of 1943 -	Total	18 to 19 million

Source of additional labor force needed

Estimated 4 to 5 million - Non-workers - young men and women taking jobs for the first time, retired persons, and women not now in the labor market. Of the women between the ages of 14 and 44, 23.1 million are classified as non-workers. Excluding those with children under 10, there remains a potential labor force of 12 million women.

Estimated 6 to 7 million - to be drawn from curtailed or shutdown civilian industries or converted factories. The automobile industry, employing (April 1, 1940) nearly one-half million persons including about 37,000 women, and the rubber products industry with nearly 150,000 workers, of whom 36,700 are women, will be converted 100 percent.

OFFICE OF PRODUCTION MANAGEMENT

File

Labor Division

Not to be released before 10 A.M.
Saturday, April 19, 1941

PM 286

Address by Miss Thelma McKelvey, Special Assistant, Labor Supply and Training Section, Labor Division, Office of Production Management, delivered before the State-Wide Conference called by the Indiana National Youth Administration on Training and Job Opportunities for Girls in Industry, attended by representatives from industry, vocational education and National Youth Administration officials.

WOMEN'S ROLE IN DEFENSE INDUSTRIES

I think I should first briefly outline the program of the Labor Supply and Training Section of the Labor Division of the Office of Production Management. In seeking to supply defense industries with a continuous flow of qualified labor, the human resources of the nation's man power have been surveyed for location and occupations, and there has been launched the largest training program ever attempted in this nation's history or indeed in the history of the world.

Labor Supply and Training, under the direction of Dr. Floyd W. Reeves, is working on the mobilization, training and placement of workers for defense industries. This is being done through a coordination of the activities of seven government agencies, namely: The United States Employment Service and its affiliated 1,500 State and local employment offices, the United States Civil Service Commission, the Federal Committee on Apprenticeship, the United States Office of Education and State and local boards of education, the National Youth Administration, the Work Projects Administration, and the Civilian Conservation Corps.

This defense training program was initiated on July 1 of last year and since that time about 816,000 have been enrolled or are currently enrolled in preemployment refresher courses for the unemployed worker, supplementary courses for the employed worker, preemployment training courses for youth in small town and rural communities and training classes for NYA project workers. In addition, the National Youth Administration has been operating its work production shops to prepare young people through actual job training for the defense industries.

In order to be reasonably certain that training is related to the occupational needs of this enormous defense program, there was established early in the defense program, an approved list of defense industries. It is important that you know what these industries are because they will have direct relationship to my remarks on the training of women for defense occupations. These industries are:

> Aircraft Manufacturing, Maintenance and Repair; Machine Tools; Shipbuilding Maintenance and Repair; Automotive Manufacturing Maintenance and Repair; Electrical Manufacturing; Forging; Boiler and Heavy Steel Plate; Foundry; Ammunition; Light and Heavy Ordnance; Sheet Metal; Chemicals; Light Manufacturing; and Woodworking.

We have heard more about three defense industries than all the rest - aircraft, shipbuilding, and machine tools, for it is in these three industries that production delays would most seriously affect our defense progress. Consequently, a great deal of the emphasis in training has been directed toward meeting the labor requirements of these three defense industries. Aircraft is expected to employ 520,000 by October, 1941, an increase of 315,000 over October, 1940; the shipbuilding program by November, 1942, will need at least 388,000, as compared to an employment figure of 127,000 in November, 1940. The machine tool industry is expected to increase from 80,200 employed on January 1, 1941 to 102,800 at the end of this year. This increase of 22,600 will include 16,000 skilled workers, 4,000 semi-skilled and 2,600 unskilled.

The first task facing the country was to put back to work the nation's unemployed man power. A great deal of this man power has been unused during the depression years and many of their skills had grown rusty. For example, skilled workers were performing jobs as filling station attendants, clerks in stores, and taxi cab drivers. Directly related to this great reservoir of idle man power were the occupational requirements of defense industries which indicated that men were wanted - skilled and semi-skilled workers - machinists, turret lathe operators, grinders, tool makers, precision instruement makers, riveters, welders, and so on down the line.

As a very natural result of this demand for labor and in full realization of the future demands for labor, men had been given first consideration in the training program because it was men industry wanted and was asking for. To speed defense production and to meet the demands of essential personnel for this great expansion, the policy of the Labor Division has been to train for the jobs which were opening up and in accordance with the kinds of labor which the employer together with the union in most instances agreed upon were essential.

On behalf of the women of this country who always in times of great national emergency have been ready, eager, and able to assume their place in industrial production, I wish to make it clear that all studies which have been made indicate that women have been found satisfactory in virtually every kind of job ordinarily filled by men. It cannot be said categorically that any particular job is absolutely unsuitable for women. Past experience has shown that it is in times of labor shortage that women become in demand as production workers. As a more restricted labor market develops, the present tendency undoubtedly will be to utilize other sources of labor reserves, of which women are the largest, most acceptable source.

Three distinct phases evolve in respect to women in this expansion. In the first stage, increased buying power resulting from greater production and employment creates additional opportunities in occupations which have traditionally been held by women. These include sales, clerical and stenographic positions, as well as occupations in the needle trades and other consumer manufacturers. An example of the effects of this may be found in the present employment situation in Philadelphia. Of an estimated 168,000 workers to be added during the next year, 58,000 are expected to be women. A large share of these will be employed in clothing and food industries, and as sales or service workers. This condition is not limited to one section but is widespread, since the economic effects of defense activities, which are the motivating force of the general uptrend, are diffused through the country. This phase of general demand for workers appears to use primarily those individuals who are normally a part of the labor market. At the present time, it is reasonably clear that the country is well into this phase.

The second phase is accompanied by a rising wage level and an approaching or anticipated shortage of male labor. Light mass-production metal-working industries involving relatively simple, high-speed machine operation and assembly work, begin to employ women as men become scarce for jobs requiring dexterity, care and speed with a minimum of strength and craftsmanship. Women have proved very satisfactory and in some instances superior to men in such occupations. Industry in the United States is just entering this phase and it is not yet clear how far it will go in this direction.

The third phase of the cycle, the one in which Great Britain finds herself today, is that in which women enter jobs in trade, service, transportation and manufacturing that have customarily been held by men. This influx of women into industry releases men for heavier, more exacting factory work, or for service in the armed forces. In this stage, women may even take over factory jobs that traditionally have been considered suitable only for men. As yet there is no evidence of the approach of this condition in this country. At most, it may be said to be only on the horizon, although there are scattered instances, principally in communities where shortages of male labor are threatened. A few such communities are encouraging the use of local women wherever possible, in order to avoid a large in-migration of men who may be left stranded and jobless with their families when the defense program is over.

According to recent reports to the Bureau of Employment Security, there is increasing evidence from many parts of the country of the employment of women in industrial occupations, especially in semi-skilled machine operations, light assembly work, and simple inspection and packing. Reports of this kind come from all parts of the country--from Kentucky, Massachusetts, California, Texas, Ohio, and other important States. Increasing work opportunities, coupled with intensive recruitment by employers, have attracted into the labor market many women who would not normally be a part of it.

In an Indiana community, the principal demand for radio assembly work is for girls 18 to 25 years old. All high school graduates are being interviewed and the local supply is reported to have been almost exhausted.

Relaxation of employers' specification as to marital status is widely reported, and in some areas special attention is being given to the solution of problems which will arise as a result of employment of married women. In Naugatuck, Connecticut, consideration is being given to the setting up of day nurseries for the care of children of married women returning to employment. In this connection, I should mention that in many places the employment of women is limited by laws forbidding their employment on night shifts.

In the first stages of our defense program, women found employment in shell loading plants on bag loading operations. Of some 4,400 workers to be added by the Goodyear Bag Loading Plant at Charlestown, Indiana, 70 percent will be women. Women are being used widely in packing, assembly and inspection. They are being hired, not only as stitchers and on light machines but as punch and drill press operators and power sewing machine operators. They may be found not only in textile mills and in radio assembly plants, but to an increasing degree in aircraft factories.

The electrical industry in California uses women on light bench work, cleaning light metal and plastic die castings, and plans to use women for simple soldering work. This compares with their employment in the metal-working trades as core pasters and core makers. A Shreveport, Louisiana, electric motor company is experimenting with the use of women as armature winders. A reflector company in Massachusetts employs women on spot welding machines. Connecticut employers are considering the advisability of using women on heavy machine press work, milling machines, drill presses, brazing and welding. In Maine, if physically qualified, they are used in machine shops. Much of this work is still in an experimental stage, but the results of experimentation may tend toward greater utilization of women.

Surveys in various industries, such as metal-working, electrical equipment and transportation, indicate that no particular job may be said to be absolutely unsuitable for women. At the request of the Labor Supply and Training Section, a list of occupations in which women may be used has been prepared by the Bureau of Employment Security. This list includes hundreds of occupations in metal working, electrical manufacturing, automobile manufacturing, aircraft construction and even shipbuilding. All jobs that require great physical strength, or in which working conditions were extremely unpleasant, are excluded. World War experience indicated that women, if given the opportunity, could acquire skills comparable to those of men. However, where these skills could be attained only by long experience which women have had no opportunity to achieve, they have been omitted from the list. Nevertheless, a great variety of occupations are included, such as die maker, etcher, core maker, barrel reamer, buffer, turret-lathe operator, valve grinder, welder, nail-making machine tender, etc.

Actual current demand, as shown by reports and indicated by actual employer orders, represents wider and wider use of women in fields formerly closed to them. As the days pass, women will furnish an increasingly important source of training material. Employers are now thinking in terms of what specific types of training will prepare women for future employment. Up to the present, these experiments have been sporadic. In any community, women may be finding jobs not heretofore open to them, but in no place is there a general trend toward wholesale employment of women in many industries simultaneously. The ultimate possibilities in this direction are still largely unexplored.

In closing, I shall take advantage of your kindness to present the pattern for the recruitment, training and placement of workers in defense occupations which has been developed.

In the first place, the Office of Production Management has urged all holders of defense contracts to fully utilize the local labor supply through the medium of their local public employment office. All employers are requested to use these offices for the recruitment of workers. Before attempting to recruit labor from outside, the local public employment office should first be consulted as to the necessity for such action and as to the methods to be employed. Labor scouting, Nation-wide advertising, and high rates of labor turnover result in disturbances of the labor market and create other wasteful and inefficient practices which the nation can ill afford in the face of the undoubted need for speed and efficiency in production. And not less important, the Office of Production Management expects each defense employer to inform the local public employment office in advance of his labor requirements.

An intensive labor registration program has just been completed through the local public employment offices to obtain the registration of all workers who are unemployed and are seeking employment, and employed workers who are skilled in defense occupations in which labor shortages are developing, but who are not making use of these skills in their present employment. Every registrant is being carefully checked to determine his availability for a specific defense occupation. There never has been a more thorough approach to determining the nation's available labor supply and its relationship to the labor requirements of employers.

Of equal importance is the responsibility of agencies like the N.Y.A. to check with the local employment service offices as to the anticipated hirings of employers in the locality. If it is known in what occupations the greatest needs for labor are - for women and men - the better prepared an agency is to concentrate toward meeting these needs. This is no time for anything but intelligent, fast moving, efficient cooperation. No one agency, individual, employer, union can do this job. Our total combined forces are needed.

Labor Market Information for the National Defense Program

The attached article from the Fifteenth *Report to Federal Statistical Agencies* has been reproduced as a separate document. It is confidential and not for publication or quotation.

Division of Statistical Standards, Bureau of the Budget

Executive Office of the President

February 28, 1941

Labor Market Information for the National Defense Program

In this article an attempt will be made to describe briefly the work undertaken by Federal agencies to compile information needed for the National Defense program on the demand for and the supply of labor. Attention will be confined to special studies or changes in existing reports made with a view to meeting the defense needs. Established sources of labor information such as the decennial census and reports under the Social Security Act, which have not been especially adapted to furnish information for defense needs, will not be discussed.

Information about the labor market is needed for a variety of purposes and by a number of agencies. It is obviously of primary importance to agencies responsible for allocating contracts, for establishing of new defense plants, for speeding up of production, for recruiting workers for defense industries, and for training such workers. It may be of value in the administration of the selective service program. The data have considerable importance for organizations charged with the responsibility of providing housing for defense workers. Local governmental authorities can make use of this information in planning to meet additional demands for schools, police protection and other services. Finally research organizations, both governmental and nongovernmental, concerned with the impact of the defense program on our national economy, are interested in this information.

Existing Demand

Information on the demand for labor may be divided into two types--that which records existing demand and that which relates to future requirements. Information as to the existing demand for labor may be obtained through regular periodic reports or by means of special surveys.

Regular Reports. At the beginning of the emergency last summer there were available various regular reports reflecting the current demand situation in the labor market. Of these the most comprehensive were the monthly employment and pay rolls indices of the Bureau of Labor Statistics, the monthly turnover series of the same agency, and the job openings and placement reports of the Bureau of Employment Security. Changes were made in or special reports added to each of these series. An effort was made to increase the number of respondents reporting on employment and pay rolls, with the result that about 3,000 additional manufacturing plants were added, primarily in industries important to national defense. Provision was made for monthly reporting by telegraph of employment and pay rolls in some 30 or 40 plants in the aircraft industry. From these reports a special tabulation is prepared for the Secretary of the Treasury. Separate indices of employment and pay rolls extending back to January 1939 are being prepared for each of 67 industries the data for which were previously lumped together with those of other industries. Special indices are also prepared for the machine tool industry which show employment in plants classified by type of machine tool produced.

The Bureau of Labor Statistics has also been constructing indices of factory wage-earner employment for individual cities, based on monthly percentages of change derived from the unweighted totals of all reports received from cooperating establishments. Indices have been released or are available for all cities over 100,000, and special tabulations for cities under 100,000 have been furnished the National Defense Advisory Commission. From these indices and Census data total employment in manufacturing industries has been estimated for cities for which this information has been requested. Estimates of nonagricultural employment by States and by seven industrial groupings since January 1929 were already available. In addition to their use as a measurement of the impact of the defense program on our national economy, these indices, together with data on contracts awarded, are useful in estimating future labor requirements.

The coverage of the reports on monthly labor turnover in manufacturing establishments has been increased, special attention having been paid to adding respondents in such important defense industries as aircraft and shipbuilding. Since January 1940 accessions have been broken down into rehires and new hires, and miscellaneous separations have been reported in addition to separations due to quits, discharges, and layoffs.

The Bureau of Employment Security has added a monthly report (Form ES-268) which gives for each of approximately 400 professional, skilled, and semi-skilled occupations regarded as essential to the defense program the number of openings in local public employment offices that were unfilled at the end of the month. These data relate to jobs that can be filled immediately if qualified workers are available. 1/

Special Surveys. Besides the expansion of regular reports, certain special surveys or tabulations relating to the existing demand situation have been made by various agencies. Thus the Bureau of Labor Statistics, in addition to its regular tabulations on employment and pay rolls on construction projects financed from Federal funds, 2/ has prepared special monthly tabulations showing number of wage-earners, manhours worked, payroll disbursements, and value of material orders for national defense construction projects. This information is shown by industrial areas

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1/ When workers are not available locally, attempts are made to secure them from other offices within the State. If such offices are unable to supply the necessary workers the job opening is then referred to the national clearance system. For a description of this system, which was put into operation last October, see the December 1940 Monthly Labor Review, pp. 1356-7. The new system supplements the older interstate clearance machinery maintained cooperatively by the various State employment services.

2/ Published monthly in "Employment and Pay Rolls."

and by some 25 types of projects for the country as a whole. The Bureau is also making studies of overtime in certain manufacturing industries, particularly durable goods. Overtime data are derived on the basis of the total hours and the number of employees reported on the monthly employment and pay roll forms. Tables are being prepared showing for each industry studied the distribution of plants with respect to hours worked per week.

Finally, the current concern over the week-end "blackout" in industry has resulted in studies by at least two agencies--the Bureau of Labor Statistics and the Office of Production Management. The Bureau of Labor Statistics has received information from approximately 400 large establishments in important defense industries (particularly those in key areas), on the number of days the plant operates per week, the number of shifts, the number of wage-earners on each shift, the amount of overtime, and factors which prevent increasing the work week and the number of shifts. The Office of Production Management has made similar surveys of the aircraft and the machine tool industries.

Future Demand

General Estimates. Studies relating to future labor requirements have been of various types. The most common have been those which attempt to estimate needs for a particular industry or for a particular local area, but there have been efforts to estimate future employment for the entire country. Last October the Bureau of Labor Statistics made a rough estimate that between five and six million additional nonagricultural workers would be needed between June 1940 and December 1941 as a result of the defense program. This estimate included not only direct employment in defense industries but also indirect employment and increased employment in consumer-goods industries resulting from defense expenditures. Recently the Bureau has undertaken studies looking toward a refinement of this estimate. Schedules of military requirements have been obtained from the Army and the Navy; and information on both American and British contracts for new plants or plant expansion, and delivery schedules are obtained from various sources. These have made possible more exact studies of labor requirements for particular industries. "Blueprints" of consumer demand at various levels of income have been prepared in the Price Stabilization Division of the National Defense Advisory Commission and elsewhere. This information, used in conjunction with employment data which the Bureau has, makes it possible to estimate future total nonagricultural employment. It is planned to develop such employment forecasts by quarters for the period through June 1942.

In order to meet its responsibilities for recruiting workers needed in the national defense program as well as to furnish information needed by the National Defense Advisory Commission, the Bureau of Employment Security has modified its employer-visiting program to include regular visits to some 20,000 establishments in industries important for national defense. In these visits, which ordinarily are made monthly, the employer is asked to list by occupations the number of workers he expects to hire or lay off during the next 60 days. He is also requested to furnish in each instance the expected duration of the employment or lay-off period, age limitations, union and citizenship status required of applicants for each opening, and whether any difficulties are anticipated in obtaining additional workers. Reports on these visits are prepared by local employment offices and sent to the State offices, which forward copies to Washington for the use of the Bureau and the National Defense Advisory Commission. Special tabulations have been prepared for the aircraft and shipbuilding industries and for each State. The Bureau has issued the first of its reports based on these data and will issue similar reports each month. In addition to making the monthly visits discussed above, representatives of local employment offices get in touch with construction contractors who have been awarded Government contracts for the purpose of ascertaining their labor needs.

Closely akin in purpose to the surveys of the Bureau of Employment Security are those made on a smaller scale by the U. S. Civil Service Commission. The prospective needs of defense agencies, including arsenals and Navy yards, are ascertained in order to facilitate the supplying of personnel.

Part II of the "black-out" study of the Bureau of Labor Statistics described above requests respondents to estimate their needs for skilled, semi-skilled, and unskilled wage earners for January, June and December 1941. In addition the Bureau is obtaining from holders of certain important defense contracts estimates of labor requirements for a longer period in advance than that covered by representatives of the local public employment offices in their monthly visits. Upon award of a large contract the contractor is asked by a field agent of the Bureau to estimate his labor needs by occupations for specified intervals during the period required to fulfill the contract.

Estimate for Particular Industries. One of the most interesting approaches to the estimating of labor requirements for specific industries consists in the use of labor patterns. This method was one of those used in the study of the shipbuilding industry recently released by the Bureau of Labor Statistics. Patterns of employment on ship construction have been developed by the Bureau on the basis of reports received on previous Federal ship contracts. These reports, received from individual shipyards, give the monthly manhours, by occupational skills, worked in the building of individual ships. From them it has been possible to construct patterns which show not only the number of workers by occupation needed to construct different types of ships, but also the stages in the production process when they will be needed. By applying the patterns it was possible to estimate by occupations and by months labor requirements for completion of the various types of vessels included in the present program.

A different approach was used in the study of labor requirements in the aircraft industry made by the Bureau last December. Monthly reports are made by aircraft manufacturers to the Army Air Corps. Among other things these reports give information on present employment and on anticipated labor requirements based on the number of each model to be made each month and the manhours of work required to make each model. On the basis of these reports, the Bureau of Labor Statistics estimated the number of additional workers to be added monthly up to August 1941, when employment was expected to reach its peak under existing contracts for airplane production. The estimates of additional workers needed at the site of final assembly by August 1941 are made by geographical areas. An occupational distribution is also presented, based on patterns developed by the Bureau of Labor Statistics from a field survey made in the summer of 1939. The Bureau is now engaged in field studies to determine whether any appreciable changes have taken place since that time. 3/

The machine-tool industry, because of its vital importance in national defense, has received considerable attention. The Bureau of Labor Statistics made a special study of it last summer based on a field survey. An analysis was made of the industry's occupational composition, and the need for additional skilled workers was surveyed in an attempt to discover possible bottlenecks. Reports on labor requirements in the manufacture of small arms, artillery, ammunition, tanks, armor plate, and other defense items are contemplated.

Considerable work has been done by the Bureau of Labor Statistics in estimating labor requirements on construction work financed by the Federal Government from defense appropriations. Notifications are received from the several agencies as construction contracts are awarded or force-account construction is authorized, with the expected date of completion stated. By utilizing construction patterns it is possible to estimate for each project employment, pay roll disbursements, and value of material orders required for completion. The information for individual projects is combined and summarized by type of construction. Tabulations showing by months the estimated figures of number of wage earners, of manhours, of pay-roll disbursements, and of value of material orders to be placed have been prepared for building, ship, and all other types of construction. Tabulations of estimated manhours by months for these types of construction have been made for each of 18 industrial areas. As has been indicated above, monthly reports are received from building contractors and Federal agencies doing work on force-account showing the actual amounts of labor and material on each contract, and hence it is possible to compare actual with scheduled progress. Estimates are now sent to Army and Navy officers supervising construction, the National Defense Advisory Commission, the Bureau of Employment Security, and the Bureau of the Budget. Thus far estimates of labor requirements in the building construction field have not been made by occupations, but certain patterns are available and such estimates are planned.

Estimates for Particular Areas. In connection with its defense training programs the Office of Education has been getting some information on local labor requirements. The application form for funds to secure training equipment calls for information on the approximate number of workers needed through June 1941 for each firm having defense

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3/ Of course technological and other changes make necessary frequent revisions of the pattern, and it may also be noted that patterns for the same product are likely to vary considerably with the size of the plant.

contracts, and local advisory committees also gather some data on the local situation in deciding what training courses shall be established. In both instances considerable reliance is placed on local public employment offices for data.

Surveys of the labor situation in particular areas made to provide information as to housing requirements will be discussed subsequently.

It can be seen from the foregoing that estimating of labor requirements has developed in response to particular needs rather than according to a pre-conceived coordinated plan. There is considerable duplication. There are also gaps remaining to be filled, the most serious of which relates to labor requirements of subcontractors, about whom little is known at present. If, as now seems to be the case, greater emphasis is placed on subcontracting, this gap will become increasingly serious.

Supply

Since little effort has been made to estimate the future supply of labor, the following section will be devoted to a discussion of the information available on the existing supply situation. This information may be conveniently considered under two heads--that obtained from regular periodic reports, and that obtained from special surveys or analyses.

Regular Reports. Under this head come several reports prepared by the Bureau of Employment Security. The Bureau takes an annual inventory of registrants actively seeking work through the offices of the State employment services which provides comprehensive data on the registrants with respect to their occupational, industrial and geographical distribution, and their age, sex and race characteristics. The date of the last inventory was April 1940, and the tabulations provided information useful for the national defense program. [4] However, because of the rapidly changing situation, these data soon became inadequate, and it was decided to obtain a monthly count of workers available in essential defense occupations. At first this was a simple count of registrants, but later further refinements as to availability were added. The present report (Form ES-268) gives monthly for each of the occupations reported as essential to the defense program the number of job applicants immediately available for referral, the number referrable after additional training, and the number not at present available or referrable (together with the number of openings pending in these selected occupations referred to earlier). Another report (Form ES-272) gives the number of accepted applicants referred to vocational education courses and the number of trainees placed in jobs. 5/

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[4] Plans are now being made for another inventory which will probably be taken about the middle of April. A special effort will be made to speed up tabulations to provide data important in the national defense program.

Special Surveys. A count was made in December by the Bureau of Employment Security of employment office registrants in construction occupations. This count covered 93 construction occupations, and indicated the types, number and location of construction workers. Information was also obtained on the number of registrants needing additional training before they would be referrable.

Three other agencies--the Work Projects Administration, the Civil Service Commission, and the Railroad Retirement Board--have made special inventories of workers under their jurisdiction which are somewhat similar to the annual inventory of the Bureau of Employment Security. The WPA is now establishing a national defense industries employment register which includes both workers on projects and certified persons awaiting assignment. The register has three divisions: (1) persons who are qualified for immediate employment in defense industries; (2) persons who are considered suitable for training (either in "refresher" or basic training courses); and (3) persons who have been assigned to training courses. The register will be maintained by State WPA offices according to occupations, the list of which is the same as that prepared and used by the Bureau of Employment Security. This inventory is intended to enable the WPA to meet promptly the needs of employers who call on it directly for referrals.

Last summer the Civil Service Commission sent questionnaires to all Federal employees for the purpose of establishing a punch card file to be used in connection with promotion, transfer and placement throughout the Federal service. Information requested included education, employment history, special skills possessed, and civil service status. Occupations were coded according to a modification of the classification developed by the Bureau of Employment Security. The Commission and the National Resources Planning Board together also sponsored the establishment of a roster of scientific and specialized personnel. Questionnaires are being sent out to about 500,000 persons in scientific fields calling for information on education, experience and specialties. To date about 150,000 questionnaires have been returned. 6/

5/ In addition certain regular Bureau of Employment Security reports which existed prior to the defense emergency provide information on the supply of and demand for workers. These are Forms ES-210, "Monthly Report of Individual Local Office Activities" and ES-212, "Monthly Analysis of Placements." The former furnishes data on applications during the month, number registered at the end of the month, and total placements; the latter provides detailed information on the occupation, industry, sex, color, and age of the registrant placed.

6/ For a more detailed explanation of the Commission's survey of Federal employees and the roster of scientific and specialized personnel see the July 31 issue of the Report to Federal Statistical Agencies, p. 7, and p. 18 of this issue.

In June 1940 the Railroad Retirement Board sent questionnaires to all employees who had applied for benefits under the Railroad Unemployment Insurance Act during the preceding 12 months. Punch cards were prepared from the returns for employees who were available for employment in occupations which were considered to be of importance in the defense industries. Tabulations show for each of 132 areas the available number of persons, classified by 35 railroad occupations. The tabulations also indicate willingness to leave the local area to obtain employment.

Special studies of the supply of labor have been made for particular local areas. The Bureau of Labor Statistics has made labor investigations at potential sites for new national defense plants which will be discussed subsequently. The Department of Agriculture has made studies of farm workers who might be available for defense work in a few areas. The WPA has made or plans to make surveys in from two to four areas in each of 14 states for its own administrative purposes. It is interested in ascertaining the need for WPA projects in areas affected by the defense program as well as the effects of this program on existing projects. In making these studies the local public employment services, business organizations and relief agencies are relied upon for information. The Labor Division of the National Defense Advisory Commission, under the direction of Morris L. Cooke, undertook last fall a series of quick field surveys of several areas where, because of technological improvements or declining industries, it was expected idle men and machines would be found. These "check-tests" uncovered a large reservoir of unused productive power which could be utilized for defense, and also stimulated further surveys by local groups throughout the country. The Rural Electrification Administration has cooperated in some of these local surveys, and the Office of Production Management is working on arrangements for pooling of idle machine tools in a Pennsylvania county.

Certain other studies which bear on the problem of labor supply may be mentioned. One is the monthly survey of unemployment begun by the WPA in January 1940. This survey covers a carefully selected sample of households in some 50 representative counties throughout the United States. The merit of the study is that it shows by months changes in the labor supply due not only to re-employment, but also to the addition of new workers to the market. Another is a study made by the Bureau of Labor Statistics for the National Defense Advisory Commission of the sources of the labor supply for the shipbuilding industry. The previous employment status of each skilled worker hired since the beginning of the emergency defense program was ascertained either from personnel records or from the worker himself. Such studies of previous employment status of workers have also been made at arsenals and navy yards where labor shortages have appeared.

Correlation of Demand and Supply

General Studies. Finally, there are certain studies which are confined neither to demand nor supply, but which rather attempt to correlate the two. The Bureau of Labor Statistics has prepared for the Army and Navy Munitions Board an analysis called "Selected Occupations Which Have Significance in the National Defense Program, Graded as to Adequacy of Labor Supply and as to Training Time Requirements." In its preparation the Bureau used its own studies and those of the Bureau of Employment Security as well as analyses by the Army and Navy Munitions Board. The study compares the anticipated demand for workers with their supply in the occupations selected as important to national defense by the Army and Navy Munitions Board and then grades these occupations according to (1) the time period within which serious shortages of labor may develop, and (2) the length of time required to train qualified workers. In addition the "industry of special significance" for each occupation, as designated by the Army and Navy Munitions Board, is stated.

The Occupational Analysis Section in the Bureau of Employment Security has been engaged in certain studies designed to obviate labor bottlenecks in defense industries. Analyses have been made of job processes and qualifications of workers to determine: (1) from what related occupations suitable workers may be drawn, (2) the nature and extent of the training necessary to get inexperienced workers and workers drawn from related occupations into satisfactory production, and (3) in what ways the occupations can be resolved into component parts. Part of this information is available in the releases comprising the "Currently Active Occupations Series" which describe the work performed and machines used, indicate related jobs, and give suggestions to the interviewers for the selection of workers. 7/ The information about jobs being developed by the Occupational Analysis Section is used by the Labor Division of the National Defense Advisory Commission in promoting "up-grading" and "down-processing" in industries where labor supply has become a problem. 8/

The Bureau of Employment Security has added a monthly narrative report (Form ES-274) which gives an over-all picture of labor market developments, with specific reference to important employment areas and

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7/ For a fuller description of the work of the Occupational Analysis Section on projects important to national defense see the October 31st issue of the Report to Federal Statistical Agencies, p. 14.

8/ "Up-grading" means putting men to work at their highest skills and training them for even more difficult tasks. "Down-processing" consists of breaking up an operation formerly performed by one highly skilled worker into several steps. A less skilled worker is then assigned to each of the steps. The worker who formerly performed the entire operation then either gives his attention solely to the most difficult of the steps, or acts as foreman of the whole operation, or both.

significant situations. This report deals with the present supply and demand situation, prospective labor stringencies and provisions being made to meet them, changes in hiring practices, employment conditions and labor relations. Three reports have been issued thus far.

On the basis of its investigations of the labor situation the Bureau of Labor Statistics has been making recommendations to the Coordinator of Defense Purchases with respect to the distribution of purchasing in a manner most likely to absorb the greatest number of unemployed. 9/ These recommendations are based upon the Bureau's own data, those of the Quartermaster Corps of the War Department with respect to available manufacturing facilities, and information on labor supply furnished by the Bureau of Employment Security. These recommendations have been largely confined to purchases of textiles, wearing apparel, and boots and shoes.

Studies for Particular Groups of Workers. Several studies concerned with correlation of supply and demand have been made for particular groups of workers. Agents of the Women's Bureau visited last fall about 40 plants having defense contracts to ascertain in what processes women could best be utilized. Articles and releases have been prepared summarizing the findings of this investigation together with the experience with women workers during the World War. Further work along this line is planned for particular industries. Although the labor problem in agriculture has not been a serious one thus far, the Bureau of Agricultural Economics is planning a study of the agricultural requirements at different seasons of the year for various crops. Information already available in the Department of Agriculture will be used. A separations study of WPA workers designed to show the extent to which these workers have been absorbed by private industry has been made by the Work Projects Administration. Workers separated from the WPA during September and October 1940 were studied in 32 sample counties selected to include both defense and non-defense areas. A preliminary release shows re-employment separately for defense and non-defense industries as well as for defense and non-defense areas.

While no formal survey is involved, local representatives of the Civil Service Commission are urged to study the Commission's "Consolidated List" of occupations in which there is a particularly urgent need of labor and ascertain what workers in their communities are available. Suggestions have been made to consult managers of local industrial plants and also to keep in touch with local officials of the U. S. Employment Service.

9/ Recommendations as to the location of new plants are made by the National Resources Planning Board to the War Department and to the National Defense Advisory Commission. Here also, the adequacy of the labor supply and the absorption of the unemployed are important considerations. No independent surveys by the National Resources Planning Board are involved, however, data already available being utilized.

Studies for Particular Areas. Finally, special surveys of local labor market situations have been made from time to time by several agencies at the request of the National Defense Advisory Commission. Surveys especially concerned with the adequacy of the labor supply at potential sites for national defense plants have been made by the Bureau of Labor Statistics. Data already available in the Bureau and in the Bureau of Employment Security were utilized. Other surveys have been made in areas where difficulties have been encountered or are expected as a result of rapid expansion of employment. These surveys have been made by the Bureau of Employment Security and the Bureau of Labor Statistics under a cooperative arrangement for avoiding duplication. Information is obtained on the actual and anticipated increase in employment, sources of supply of workers, volume and character of migration, and social problems such as the adequacy of housing and transportation and educational facilities.

Certain local surveys have been made for the express purpose of obtaining information on housing requirements. Shortly after his appointment the Coordinator of Defense Housing requested information on the number of additional workers who would be brought into key defense areas, their probable distribution by wage levels, and the proportion of new workers who were likely to have families. In response to this request, the WPA made field surveys on housing needs in about 40 industrial areas between August and October 1940. The labor estimates made as a part of these surveys were based on interviews with personnel officers in important plants, labor union leaders, etc. The Bureau of Employment Security and other agencies were also utilized for surveying housing needs. In order to avoid duplication, an agreement was reached last fall whereby labor information was to be furnished jointly by the Bureau of Employment Security and the Bureau of Labor Statistics, with the former doing the field work; vacancy surveys were to be made by the WPA; and the possibilities of private construction were to be investigated by the Federal Housing Administration and the Home Owners' Loan Corporation.

It has not been possible to include in this article surveys made by State and local governments, labor unions, industrial organizations, or other private organizations, even though they may have been made with the assistance of Federal agencies. It may be noted, however, that many such surveys have been and are being made. These may be concerned entirely with the labor situation, or may deal with it only incidentally, as does the current productive facilities census conducted by the National Association of Manufactures.

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(Prepared by Dana M. Barbour of the Division of Statistical Standards, with the assistance of Arthur T. Jacobs of the same Division. Acknowledgment is due to the various Federal agencies furnishing information for this article.)

[Reprinted from The Woman Worker, bimonthly publication of Women's Bureau, U. S. Department of Labor, Washington, January 1941]

Processes Women Are Performing in Defense Industries[1]

As a beginning to an extensive investigation of the possibilities of women's employment in the defense industries, agents of the Women's Bureau visited last fall about 40 plants having defense contracts for products on which women could be employed. These plants, chiefly in the industrial Northeast with a few in Ohio, include machine-tool manufacture; electrical-supply plants; ammunition and firearms factories; plants fabricating iron, steel, brass, and aluminum products; and aircraft plants making engines, instruments, and parts, and assembling planes. Women are at work on many processes and could be employed even more widely.

Airplane Factories.

Airplane manufacture usually spreads itself over several specialized types of establishment. The making of the fuselage, wings, ailerons, rudders, engine mounts, elevators, and stabilizers, and the final assembly of the planes, are carried on in the body plants.

Development of jobs for women has been delayed by the oversupply of male labor and the lack of opportunity for women's training. Women are said to comprise a large share of the personnel in some European plants. A recent report states that four-fifths of the force in some French factories were women, and they produced fighter planes in their entirety. Women are quick and skillful, and the industry provided lighter tools for them and arranged that the heavier lifting in assembling machines could be done by electric belts.

In the United States openings for women have been limited, the chief requirement being for skilled all-round mechanics, and tolerances for error being small. This condition is due to the fact that rapid changes in designs, materials, and engineering practices have retarded standardization and the making of interchangeable parts. Therefore, a high degree of skill and constant adaptability are required; machines, dies, shop equipment, and lay-out have not yet reached an assembly-line set-up, and the jobs are not of the repetitive type so largely employing women.

In plants making engines and parts the major job for women is inspecting small parts, and this generally is more than a simple visual task, since blueprints are used and all parts are inspected to fine degrees of tolerance. Some women are at work cleaning metal parts by dipping them in vats containing a soda solution to remove grease; others etch identification numbers on small parts with an electric needle, in a few cases using a pantograph, in others operating a multiple electric needle—15 needles with a foot control. In a body plant very small numbers of women were found in the paint shop where doping of wings is carried on, but this is done to only a limited extent; and in the upholstery department, but bombing planes have no upholstery.

In inspecting pipes, tubes, and small parts for engines, women use scales, length gages, snap gages, ring gages, plug gages, go-no-go gages, and so forth. Gears are inspected visually with gages; spark plugs checked for leakages with the use of electric indicators; weight and diameter of pistons checked with close tolerances; all parts purchased or made elsewhere are closely inspected with hardness-testing devices, verniers, Rockwell and Schore testing indicators; stiffness of springs is tested with a special indicator; some of the parts to be inspected are projected by shadowgraph to insure more accurate work.

Plants Making Instruments.

The instrument field for aircraft is a relatively new and developing one. The airplane of today has many instruments and meters. There are fuel and oil gages, rate-of-climb indicators, turn and bank indicators, speed indicators, clocks, compasses, altimeters, air and oil temperature indicators, tachometers, voltmeters, synchronizers, automatic gyroscope pilots, and others. Instrument workers must have ability for careful work on small parts and appreciation of fine mathematical tolerances. At present many of them have been watchmakers. Women's training and participation could be extended.

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[1] See reprints from Woman Worker for September and November 1940, and mimeograph: Increase in Woman Employment, 1914–18, and Occupations of Women in Defense Industries.

Most of the women now in instrument factories are on bench work, assembling parts with riveting presses, arbor presses, automatic screwdrivers, soldering, electric spot welding of wires, and other light jobs involving the winding and cutting of wires. Some of this work is fine and requires close attention as well as finger dexterity. In one plant women operate small automatic screw machines of turret-lathe type, which are set up and adjusted by men. A number of women operate small sensitive drills of the bench type, some do multiple-jig drilling on metal and bakelite parts, and some do countersinking on small parts. Other machine jobs are tapping and grinding pivot points. Radium painting of dials for instruments is the occupation of a small group, protected by glass-shielded exhaust boxes. In plating departments women hang parts on racks and remove them after the plating operation is completed, a job formerly done by men.

Women are employed quite extensively on inspection of incoming, in-process, and completed parts. This requires checking with blueprints, and using micrometers, calipers, microscopes, and a variety of small gages. Other jobs are the hand polishing and finishing of some parts with fine emery paper, cloths, and abrasives; and packing small parts and instruments. Winding armatures and coil winding are principal occupations of women in one plant, a type of work familiar to women in electrical manufacturing. A few women production clerks route orders and keep stock records. Women also work in small numbers in the drafting room, doing some scale drawing, tracing, and serving as general assistants, but draftsmen are men with engineering training.

Electrical-Products Plants.

In electrical-supply manufacturing, women have long worked on various light assembly and inspection jobs. Winding coils and armatures is important in these plants. Also, there seems less opposition in electrical than in some of the metal plants to the idea of trying out women on new jobs when defense contracts are in full swing, and the general feeling seems to be that women's employment both as machine operators and as inspectors will be extended.

Women could be employed much more extensively on many light machines, bench lathes, repetitive milling-machine operations, welding, tool cribs, and as drafting helpers. More women could be employed on drill presses and on some of the heavier assembly jobs in which the work is not too strenuous for them; on arbor-press assembly, operating riveting machines, and doing light wet grinding. Men were found testing the resistance of springs with indicators and this seems a woman's job possibility.

Machine-Tool Factories.

A few women are in machine-tool factories, and more can be employed. Women are doing bench work, inspecting, light machine work, wrapping and winding coils, and packing. In one plant women are driving and controlling overhead cranes, and are found more efficient than men.

Gun and Ammunition Plants.

In the shell divisions women are employed largely as inspectors and as tenders of machines that draw the cups for the shells. Inspection is visual, with occasional use of gages, and work on drawing machines is simple, so little training is required. Women assemble some types of shells, and spray guns with lacquer. Women are employed on punch-press operations and assembly on other nondefense products.

A striking instance of the employment of women because of skills developed in other work is that of a plant where the delicate operations required in making time fuses were done by women who had worked on fine embroidery. Male watchmakers had not proved successful at this work.

Other Metal and Electrical-Supply Plants.

A miscellaneous group of plants making sewing machines, needles, electric motors, electric fans, vacuum cleaners, storage batteries, magnetos, springs, machinery parts, fuses, air manifolds, pumps, and so forth were visited. Machines successfully operated by women are drill presses of all kinds—sensitive, jig, and counter sinking—tapping machines, small and medium-sized punch presses, riveting presses, machines moulding bakelite parts, specialized machines for the milling, punching, grinding, polishing, and packing of needles, wire-winding machines, and other small machines of a specialized type. Women perform a variety of bench-work operations, preparing work for processes, cleaning, assembling with the use of hand tools and automatic screwdrivers, hand filing, burring, and light grinding. Large proportions are inspecting and a few acting as drafting assistants and production clerks. An official of one of these plants that did not employ women felt that they might be used successfully on many drilling, grinding, tapping, assembly, and inspection operations.

January 28, 1941

Memorandum to Miss Anderson

From Rachel F. Nyswander

Re New York Times newspaper clipping about jobs for women in the Washington Navy Yard

The Washington Navy Yard greatly regrets the untimely release of any information about jobs in the Navy Yard for women; this was due to a mistake in routing the Commander's requisition for anticipated personnel, the report getting by chance to the press relations bureau in the Navy Department instead to Naval Ordnance civilian supply.

In the first place, it is the Washington Navy Yard only, not the other Navy Yards, where jobs were open. Only 20 to 30 people were required. The Commander likes to get as intelligent people as he can, and in his requisition made the comment that perhaps there were some women in the Washington vicinity with engineering training who would be interested. The Civil Service liasion man at the Navy Yard said to fill the jobs with highly educated people would be an unnecessary waste of one's education - the jobs were for junior inspectors paying $1640 (without a degree but having two years of college in mathematics, physics, or metallurgy) and $2000 (with a degree). The rating is CAF-5 for the latter (not a Professional rating). These jobs in the past have been filled with promotions of men long in the Yard - experienced skilled workers. It is true a person of engineering education could fill the jobs, but it was unnecessary to draw on this group.

There is to be announced on Jan. 29th, a Female Trainee examination for Manual Occupations, limited to ages 18-25, for minor under-inspectors. There has already been announced by Naval Ordnance a similar-titled examination for the Alexandria Navy Yard, for junior-inspector of engineering materials, requiring one year of college or else experience along certain lines, limited again to ages 18-25; duties here include checking specifications, some reading of blueprints, checking gages, dial indicators, measuring instruments, and visual inspection as well as counting and packing.

The Navy Department is doing its best to cover up this unfortunate public announcement about Washington Navy Yard personnel needs. The same clipping mentioned minor machine work in the shop, and the recruitment had already been completed when the story appeared.

Miss Spring

women eligible for apprentices exam below age of age

THE

Washington Navy Yard Issues Call to Women To Work as Scientists, Engineers, Mechanics

Special to THE NEW YORK TIMES.

WASHINGTON, Jan. 17—Engineering and mechanical jobs at the Washington Navy Yard are open to women, the Navy announced tonight, because the supply of men available for such positions "is rapidly becoming exhausted."

The number of women required has not been determined, but, it was indicated, there will be places for many.

"It is believed," a Navy spokesman said, "that there are a large number of women in Washington or its vicinity who have received a scientific or an engineering education who will be glad of the opportunity of serving their country in the present emergency, even though they have to make some personal sacrifice.

"They will be sufficiently remunerated, but they will really have to work."

Some women, it was said, could be put to work immediately. Other volunteers will be placed on a list for call as needs for their services arise.

Specifically, the types of women desired are as follows:

Those holding an A.B. or B.S. degree from a recognized college or university, and who have majored in mathematics or physics.

Those holding a B.S. or M.S. degree in mechanical, electrical or metallurgical engineering.

A very few holding a B. S., M. S. or doctor's degree in chemical engineering, preferably those who have engaged in laboratory or research work since graduation from college.

Those who have had one or two years of engineering school education along the lines indicated above, with the exception of chemistry, who are able to work in shops.

Those with a high school education and who have received sufficient mechanical training, or have sufficient mechanical aptitude, to perform minor machine work i shops.

Women who are interested this type of work are requested contact the personnel officer of Navy Yard at Eleventh and Streets, S. E., Washington, as as convenient.

Please to Give

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4th district

Mr. McEymaux in Navy Yard

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measuring instruments

visual inspection, counting packing

December 27, 1941

Memorandum to Miss Nienburg

From Rachel F. Nyswander

News item in Periscope column of Newsweek for Dec 19th week (1941)

". . . Surveys already made in 13 navy yards indicate that roughly 30% of the machine work there could be handled satisfactorily by women."

With regard to this item, Miss McKelvey of OPM says the Navy has just begun to give consideration to using women on machine work in Navy Yards. Letters have gone out to the commandants to survey their machine shops and other operations to see what women could do. The Navy hasn't come to any conclusions yet. The Navy is doing this on their own - i.e., not in cooperation with OPM nor with Bureau of Employment Security. There is no report of any kind by the Navy as to this. The percent in this news item is someone's guess.

Nyswander

Misc. 2546

WOMEN
AND
NATIONAL DEFENSE

Federal Security Agency
U. S. OFFICE OF EDUCATION
Vocational Division
Occupational Information and
Guidance Service

Washington
1941

WOMEN AND NATIONAL DEFENSE*

by

Marguerite W. Zapoleon, Specialist in
Occupations for Girls and Women

Defense against the insidious warfare of today requires action on many fronts. On most of them, American women are already busily engaged. They are serving in the armed forces of the country, in Government agencies, in industry, in schools and colleges, in women's clubs, and in volunteer organizations. A review of these areas of activity indicates how other women may serve as the need grows even more urgent.

Women in the Armed Forces

We usually think only of the men in the armed forces of our country, but besides the women who type and file and perform housekeeping functions in the Departments of War and Navy, there are 1,135 women serving as regular nurses in the Army Nurse Corps. An additional 450 reserves have already been added to the regular staff, and by July this number will be increased to 4,000. In the armed forces are also some 90 civilian nurses and 222 women medical technologists, working as dental hygienists, therapy aides, and dietitians. Much publicity has been given to the new hostess jobs in the Army, created as an innovation to supply a woman's service in connection with leisure-time activities in Army camps. But since 10,000 women applied for the 100 available hostess jobs, it may be well not to direct too much attention to this new opening for women.

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*Address before the International Association of Altrusa Clubs at the National Vocational Guidance Association's Convention at Atlantic City, New Jersey, February 21, 1941.

Women and American National Red Cross

Thirty-six years ago, the Congress of the United States chartered the American National Red Cross, authorizing it to perform certain duties, among them, "to act in matters of voluntary relief and in accord with the military and naval authorities as a medium of communication between the people of the United States and their Army and Navy". Today this great agency, so closely tied up with our Government, though supported entirely by voluntary contributions, has some 1,300 workers on its national staff, many of whom are women.

Most of the positions in national and local chapters are filled by social workers, although some public health nurses and a few nutritionists are employed. As the armed forces increase, there is likely to be a gradual increase in the number of such workers employed by local chapters.

Besides its regular staff, the Red Cross maintains reserve lists of social workers, nurses, and medical technologists who can be called upon in an emergency. For example, during the Mississippi flood of 1937, more than 1,000 "reserve" social workers were employed by the Red Cross, mostly on a loan basis from other agencies. While its reserve list of social workers and of medical technologists is adequate at present, the Red Cross is striving now to build up its reserve list of nurses to 40,000.

Volunteers, of course, form the greatest number of Red Cross workers and their activities are described later.

Women and National Defense Activities of the Government

Thousands of women are writing to Government agencies inquiring about Government defense jobs. These are filled through the usual channel of the U. S. Civil Service Commission, which has recently held or announced examinations, for the following workers who are quite likely to be women: stenographers, typists, card-punch operators, medical technicians, home economists, hospital attendants, occupational and physiotherapy aides, chemists, dietitians, translators, library assistants, bindery operatives, information specialists, telephone operators, junior professional assistants and student aides, junior statisticians, and others. As might be expected, the demand for additional workers has been particularly great in the clerical fields as the volume of work has increased in Government defense agencies. In March separate statistics on women workers in defense agencies will be available from the Civil Service Commission. During the past eight months approximately 176,833 Federal employees (both men and women) have been added in establishments designated "defense agencies" as of January 16, 1941.

A number of Government agencies have been active in suggesting how women can serve.

The Commission of National Defense itself has one woman member who directs consumer protective services. She has presented the following 7-point program suggesting what women can do on the home front:

1. Start a local radio news service to tell housewives the good and cheap food buys each day.
2. Start a school lunch program.
3. Work for low-cost ways of selling milk, fruit, and vegetables so that low-income families can get them.
4. Set up diet clinics where homemakers can bring their nutrition problems.
5. Support the food stamp plan.
6. If you have land, learn to raise food you can't buy and can it.
7. Urge merchants to sell Government-graded foods.

Along this same nutrition front, the Bureau of Home Economics in the U. S. Department of Agriculture has issued a diet pamphlet under the title "Eat the Right Food to Help You Keep Fit."

The Women's Bureau in the U. S. Department of Labor has concerned itself principally with the industrial front. As early as July, a labor advisory committee was formed of women representatives from the Women's Trade Union League and unions in defense industries, and, after consultation with this group, the Bureau issued a pamphlet on the "Effective Industrial Use of Women in the Defense Program," which outlines the working conditions which should be observed in the employment of women in defense work.

In November, after agents of the Bureau had visited forty plants working on defense orders for munitions, optical goods, and other products, a second conference was called at the Women's Bureau, attended by members of the Labor Advisory Committee, by the Women's Bureau Advisory Committee (composed of members of representative women's organizations), and by representatives of women's service clubs. This group urged the training of women in a number of skills, such as blueprint reading; micrometer, scale, and other gauge reading; knowledge of metals and cutting tools; shop mathematics and shop practice; types of training usually given to men. It also issued a list of occupations which trained women could perform in the emergency, which includes occupations in clerical and routing operations, in health services, in radio receiving and transmission, in food preparation and servicing, as well as such industrial occupations as machine operation; sheet metal work; assembly and bench work; drafting; inspecting; armature, stator, and coil winding; welding; optical goods operations; and tool cleaning and grinding. The Women's Bureau has also investigated the number of women available for work in defense industries at present, and, looking toward future needs by examining the past, has issued a list of occupations in which women substituted for men in the last war and statistics showing the increase of women workers during that period.

The U. S. Office of Education is responsible for the administration of funds appropriated by Congress for defense training. Although women as well as men were eligible under the law for training under the program which began last summer, the types of courses offered were those in which few women are likely to enroll. Here and there, however, women were admitted in local training courses in machine shop, welding, airplane ground work, drafting, etc. Altogether 595 women were trained by February 1, as compared with some 300,000 men. We should not forget, however, that there are approximately 50,000 girls enrolled annually in the regular federally reimbursed industrial and trade day classes. The greatest number of these take garment making work of some type, and it is not unlikely that clothing manufacture will eventually find a place on the official defense industry list and that these and other girls' classes will be financed from defense funds. The girls' vocational schools are already experiencing a sharp increase in demand for trained girls. For example, the Essex County Vocational School for Girls in Newark, New Jersey, and the Whitney Vocational High School in Toledo, Ohio, report shortages of power machine operators which they are attempting to meet by establishing extra training units. An increased demand for girls who have specialized commercial training is evident in both communities as is the demand for girls trained for light factory work. These trends will become more and more pronounced as the supply of male workers is reduced and as industries now held up for lack of tools and equipment attain capacity production.

Last fall special appropriations were made by Congress for the training of girls and boys employed on NYA projects. This training program will affect some 196,000 girls now engaged on such projects. Some 20,000 of them are already employed on work projects where they are gaining experience in operations useful in defense, such as radio repair, welding, sheet metal, and light machine operation.

It is interesting to note that while no girls have been trained under the rural youth defense training program, some 15,000 women are annually enrolled in day and evening federally reimbursed agricultural courses.

The Engineering Defense Training Program at the close of 1940 was offering 25 different types of courses in engineering colleges to train engineering helpers. While an occasional woman may be enrolled in these courses, the number is negligible. However, even in this field, one class at the University of Cincinnati has been organized especially to train women for aviation engine plant work in process and finisher materials inspection.

In aviation, too, women are seeking training. Last fall, 942 had completed civil pilot training courses, and 83 women are now taking courses in airplane mechanics.

The Work Projects Administration also has under way training projects for women. The training of some 50,000 institutional workers, who can serve as attendants in clinics, hospitals, and other institutions, has begun with the initiation of small classes of WPA workers at the Henry Grady Hospital in Atlanta and in two other hospitals. Twenty-eight thousand housekeeping aides will also be trained during the next year. A mimeographed publication on "Welfare Projects and National Defense" describes how WPA projects can help meet health, recreational, and other needs and suggests specific programs for local action.

Women in Defense Industries

Let us look again to the industrial front. While the list of defense occupations prepared by the U. S. Employment Service contains few in which women are customarily employed, the Women's Bureau has indicated those for which women are suited and can be trained. Women are already operating lathes, punch presses, and other machines. They are assembling parts and inspecting and folding parachutes. We even find them operating over-head cranes. And they are working as is their wont in their usual occupations in increasing numbers as men workers are drawn off for selective service or obtain work in the heavier industries.

Women's Activities in Schools and Colleges

Our schools and colleges, aside from their part in the training program already described, are eager to contribute their share to national defense. Teachers, most of whom are women, and school administrators will find suggestions in a publication recently issued by the Office of Education on "The School Program and National Defense."

Many women's colleges have undertaken defense projects. Russell Sage College, for example, has substituted for nonessential extra-curricular activities a program which requires each student to master one of the following emergency skills: elementary nursing, emergency feeding and nutrition, aviation, auto and ambulance driving and repair, elementary business knowledge and skills. In addition, the physical education program is being expanded, forum and radio discussions of defense issues are being arranged, and opportunity is given students to participate, if they wish, in activities of war relief organizations.

Keuka College is offering five new courses: first aid, emergency rationing, home hygiene and care of the sick, emergency recreational and leisure-time leadership, and personal relationships in national emergency.

Simmons College has a faculty committee to survey its own professional schools to see what assistance it can offer in the emergency.

Women's Organizations and Defense

Women's organizations have risen characteristically to the occasion in all manner of ways.

Among the professional groups, the American Home Economics Association is polling its 15,000 members to register their availability and their special skills. The New York State League of Nursing Education is surveying 100,000 registered and practical nurses in New York State and is arranging refresher courses for them as needed. The American Library Association has issued a memorandum on how librarians can serve defense needs.

The Business and Professional Women's Club is tallying the vocations of its 73,000 members as are also Altrusa International and the American Association of University Women. The latter organization is recording not only the vocational and avocational abilities of its members, but also the housing and sewing facilities they might make available in an emergency. A code for volunteer workers published last May by the AAUW is especially applicable to those who plan to contribute their services in defense work. The general director of the AAUW, after consulting the Adjutant General's office, has addressed a letter to branches situated near Army camps which suggest that they offer their services to the camp commander in organizing a local civilian committee to assist in furnishing housing, recreational, and welfare services outside the camp organization. Like many other organizations, the AAUW plans to discuss pertinent defense problems in its discussion groups and has already issued a pamphlet for the social studies discussion group which describes the national defense set-up. A leaflet called "Today's Challenge to the American Association of University Women" suggests how members can contribute to national defense.

The General Federation of Women's Clubs, in addition to urging its members to back their community welfare programs and aid the Red Cross, has been active in promoting the appointment of women on State and local defense councils. So far, it has representatives on ten of the State councils and on hundreds of local ones. The Federation is stressing hemisphere defense by encouraging scholarships for Latin and South American students and urging the compulsory teaching of Spanish in our public schools.

The National Women's Trade Union League is devoting all of the March issue of its Life and Labor Bulletin to the subject of defense and is urging action on the housing front.

Representatives of these and many other organizations met at Vassar College recently to discuss defense activities of women's organizations.

Volunteer Organizations

Finally, women are volunteering their services to organizations especially designed to utilize them.

Chapters of the American Red Cross have enrolled 800,000 women volunteers who are making garments and surgical dressings, knitting, teaching short-term courses, or assisting in other ways.

A new organization, the American Women's Voluntary Services, patterned after the Women's Voluntary Services in Great Britain, has enrolled more than 10,000 women in 16 States who want to learn how to cooperate efficiently with policemen, firemen, and social workers in times of emergency. With the aid of the Red Cross, courses are offered in first aid, air raid and war gas work, evacuation procedures, home nursing, diet and canteen, communications and auto transport and repair, and map reading.

Somewhat more military are the Green Guards of America, organized to serve as women auxiliaries with posts in many parts of the country. Their courses include drill, rifle, and pistol shooting; air-raid precautionary work; ambulance driving and servicing; and other types of services women may be called upon to perform in time of war.

The Women's Defense Cadets are drilling in New York with the purpose of preparing themselves physically to meet efficiently and in an organized way war-time emergency situations. Similarly, in a number of cities, members of the Women's Hospital Reserve Corps of the American Women's Hospitals are being trained in drilling, rifle practice, first aid, and the care of the sick.

Relief Wings, Inc., has been organized to recruit women aviators for service in emergencies.

In a number of cities, women have arranged for city-wide voluntary registration of women for home defense volunteer work. In Troy, New York, the Volunteer Bureau of the Troy Council of Social Agencies has a file of cards of some 5,000 women who registered voluntarily during two days in December proclaimed by the Mayor for the purpose. Schools, factories, churches, and offices were used for registration and 100 women's clubs cooperated. As a result, training classes are being conducted in nurses' aide work, motor corps work, radio work, canteen work, food conservation, typing, recreation and public speaking. Similarly, in Pasadena, California, an "R-Day" was planned.

Ingenuous methods of raising money for British, Greek, and Chinese war relief agencies and the Red Cross include the successful Westchester plan of collecting and selling scrap metals.

Perhaps, even in this necessarily limited account of the variety of defense activities women are engaged in, one can observe obvious signs of duplication, which time and better organization will eliminate. But the enthusiasm and eagerness with which American women are seeking to serve augurs well for our national defense. For no matter how well prepared are the front lines of defense, upon the women of the country depends to a far greater extent than their numbers indicate, that all-important spirit which, in times of stress, we term morale.

appendix i

REPORTS OF WOMEN'S BUREAU INVESTIGATIONS RELATING TO DEFENSE

a. Women's Vocational Training Needs in the Defense Industries
November, 1940

b. Women's Factory Employment in an Expanding Aircraft Production Program
May, 1941

c. Employment Possibilities for Women in the Manufacture of Small Arms Ammunition.
June, 1941

d. Employment Possibilities for Women in the Manufacture of Artillery Ammunition
(In Progress)

ESTIMATES OF NUMBERS EMPLOYED AND UNEMPLOYED, 1929-41 [1]

(Millions)

	American Federation of Labor Employed	American Federation of Labor Unemployed	National Industrial Conference Board, Unemployed
1929	46.2	1.86	-
1932	36.9	12.9	12.5
1933-40	41.7	10.4	9.2
1940	44.9	9.1	8.1
March, 1941	46.9	7.6	p. 6.1

(p. - preliminary)

Under the New Deal the record of employment has not been unsatisfactory. Over the years 1933-40 the volume of employment was considerably above that of 1932 and by March, 1941, had surpassed the level of 1929. The unemployment statistics are less satisfactory. Compared with the amount of unemployment in 1929, the average over the years 1933-40 has been very high; and even in March, 1941, there were almost 6 million more unemployed than in 1929. These figures show that the rise of unemployment since 1929 is roughly equal to the increase in the numbers on the labor market, which averages about one-half million per year. The rise of employment in March, 1941, over the average for 1939 was 3.7 million; in unemployment the decline was only 2.6 million. These latter figures measure one effect of the defense program on the labor market.

These figures on unemployment are, however, to be used with some caution. Information given by the census of March, 1940, has raised considerable doubts concerning current figures. The net result obtained in any calculation depends upon (1) the classification of workers employed on federal projects; (2) the classification of workers who have jobs but are not employed on any given day; (3) allowances for changes in numbers on the labor market; (4) any allowances for reduction in hours of employment (part-time employment) and employment at occupations, e. g., farming, below the worker's usual productivity level. On the basis of the census data, the writer obtains a figure of 5 to 6 millions unemployed in 1940. (pp.37-38)

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[1] From the American Federationist, May, 1941; The Economic Almanac, 1940; and the Conference Board Economic Record, May 24, 1941. The maximum unemployed was 13.3 million in 1933.

Source: The Economics of American Defense
by Seymour E. Harris
W. W. Norton & Company, Inc.
New York. 1941.

LABOR POTENTIAL 2/

. . . . . With respect to labor the successful outcome of the defense program will depend upon (1) the numbers of unemployed who can be absorbed in essential industries; (2) the increase in the numbers available on the labor market; (3) the rise of hours per employed laborer; and (4) the net change in output per worker associated with a rise of man-hours of employment.

There are various methods of estimating the amount of available man power. According to the 1940 census, there were 52.5 millions on the labor market in April, 1940. Earlier estimates were several millions higher. In the view of one Washington expert, the census authorities have failed to include large numbers of seasonal laborers, a large proportion of the workers on governmental projects, and various other groups. The difference between the census estimate of the number attached to the labor market (52.5 million) and the average numbers employed in 1940 (46 million) gives the amount of additional labor available for the defense program, that is, 6.5 millions. 3/ The figure is smaller if end-of-year figures are used for employment in 1940, and larger if the more optimistic estimates of the working population are used. . . . .

Possible Additions to Labor Supply - From March-June, 1940

	Millions of Men
1. Unemployed and available for defense work (March 1940)	5.5
2. Associated with an increase of hours from 40 to 50, equivalent to	5.5
3. New workers on market (exclusive of 4 and 5) and released through continued technical improvements	1.0
4. Additional women	2.0
5. Influx from farms	2.0
	16.0
Reduce by 2 millions for reasons stated below	14.0

2/ For estimates of unemployment see R.A.Nixon and P.A.Samuelson, "Estimates of Unemployment in the United States", R.E.Sta.,August 1940, pp.104-111. According to the National Resources Committee (Patterns of Resource Use, the R.E.Sta. for 1940 is roughly the same.) Later estimates are lower, however. In recent years the size of the labor force has been overstated as a rule and the amount of nonagricultural employment understated. Unemployment,then,has been overstated. See the excellent discussion by Dr. W. S. Woytinsky, "Controversial Aspects of Unemployment Estimates in the United States," R.E.Sta.,May 1941, pp.68-77.

3/ S.C.B.,February 1941, p.30. The Twentieth Century Fund, Labor and National Defense, p.4. Basing himself largely on census figures and the proportion aged 14 and over in 1929, Professor Hansen estimates the potential labor force in 1942 at 57 million, or 10 million in excess of employment in 1940, which he puts at 47 million. Op.cit.,R.E.Sta.,May 1941, p.91.

It would be possible, then, to increase the number at work in non-agricultural employment from 37 million (end of 1940) to a point roughly 40 percent higher. This figure may be excessive if, in response to higher wage rates, employees who are not the main breadwinners should desert the labor market. Possibly some allowance should be made (in addition to the 1.3 million employed and not actually at work who are not included in /1/ above) for unemployables and temporary unemployment of a frictional nature, e.g., workers in process of movement from one industry or place to another. An allowance of 2 million seems adequate to correct the total estimate for all these factors, leaving the total possible addition to the labor supply somewhere near 14 million.

These estimates are obtained as follows:

1. Deduct from the census figure of 5.1 million for those unemployed and seeking work in March, 1940, 1 million for additional requirements for military service, and add to the number available one-half (1.45) of the total now employed (2.9 million) in government work projects of all kinds. The assumption is made that one-half of the latter would still be required by the government. The figures for unemployment do not include 1.3 million who had jobs but were not at work (due to temporary layoffs, sickness, etc.) at the time of the census. [4]

2. Average work hours in manufacturing industry had declined from 48 to 39, or even lower over the period 1920-40. They are now beginning to rise again. On the assumption that 43 million will be employed in manufacturing industry at the peak of 1942, that the rise of hours will be from 40 to 50 hours, and that the additional output will be not at the old rate but at the old rate reduced by one-half, the annual gain associated with the rise of hours would be equivalent to 5½ million man-years of employment. This may be a pessimistic estimate. The point at which man-hour output declines due to reduced effiency depends upon the nature of the work, the number of hours of work preliminary to the increase of the working day, and other similar factors. There is, it should be observed, a point at which output per man declines, despite any further increase in hours of work.

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[4] Professor Slichter estimates the unemployed at 9 million: 5.1 unemployed and seeking work plus 2.9 million on public emergency work plus 1 million of the 1.3 million temporarily out of work. Economic Factors Affecting Industrial Relations Policy in National Defense, pp.32-33.

3. Included in this figure are not only the new workers normally added to the labor market (net) due to population increases, but also labor released through further gains in organization and technology.

4.5. These are fairly conservative estimates. Many have put the probable influx from the farms at a much higher figure. In 1940 there were 9 million employed in agriculture and 6.1 million self employed, domestic servants, casual laborers, etc. In so far as any of these groups or those included under (3) above obtained employment, the rise of employment does not account for a corresponding reduction of unemployment. Under great pressure the increase of numbers on the labor market in these two years may well exceed 5 million, as is estimated above.

It is possible not only to add to the labor supply and, a fortiori, to the number employed, but also to reduce the numbers attached to service industries, thus releasing additional labor for essential industries . . . It might well be possible, if an all-out effort were required, to cut employment in service and distribution industries by one quarter, or by 5-6 million. 5/

In a great emergency it might be possible, then, to increase the annual labor supply by the equivalent of 14-15 million normal man years, and to increase the labor supply in essential industries by an even larger amount. In fact the rise is not likely to be of these proportions In the view of Professor Hansen, absorption of new employees is not likely to exceed 3 million per year. The rise in terms of normal man-years (e.g. 2,000 hours annually) may, however, well be much in excess of 3 million if allowance is made for the general rise of hours of work. It has been estimated by the Twentieth Century Fund that the defense industries will require 3 million additional workers at the peak of defense activity in 1942, and that in industries profiting from the defense program an additional 3 million may be required. According to Mr. Hillman, however, the rise of all nonagricultural employment for about a year has been but 2.5-3 million; and the additional numbers required for defense for the year ending April, 1941, is put at 1.4 million.

A safe conclusion is that if the distribution of man power by occupation were reasonably close to the required one, the supply of labor would not be a serious problem. Absorption is in part a problem in timing. (p.85-89)

5/ The Twentieth Century Fund, Does Distribution Cost Too Much? pp.62, 117-118, 378; W. Mallenbaum, "The Cost of Distribution," Q.J.E., February 1941, p.268; cf. F. Wunderlich, British Labor and the War, p. 19; G. Crowther, Ways and Means of War, pp.48-49. The latter contemplates a saving of 3 million workers in Great Britain, the number of additional workers entering the fields of personal service, transport, entertainment, commerce, etc., since 1921.

U. S. Department of Labor
WOMEN'S BUREAU
Washington

LABOR AND THE NATIONAL DEFENSE PROGRAM

B. L. S. luncheon - Isador Lubin
October 1, 1940

I. Program of the Labor Section of the National Defense Advisory Commission

The *first* purpose of the Labor Section of the National Defense Advisory Commission is to determine the labor needs of the defense program. On the basis of statistical information available - largely, that accumulated during the last seven years by the Bureau of Labor Statistics - the Division has determined the amount and kind of labor which will be required. It has been estimated that 4½ million man-years will be required to complete the production program as at present outlined. This demand for labor will probably reach its peak about 1942 and taper off until about the end of 1944. The production program will demand about 1½ million skilled workers, or one-third of the total, a third semiskilled, and a third unskilled. The number of skilled workers required for each of the leading defense industries has been estimated. Because the industries producing the goods immediately needed for defense are man-employing industries no estimate has been made of the number of women required. Such an estimate may be necessary, if and when the army and navy demands for other dommodities produced largely by women increases.

The *second* purpose of the Labor Section is to locate and furnish the required labor supply. This is being done largely through public employment agencies. The supply of labor will come from three sources: *first*, the unemployed; *second*, employed workers who with a little training may achieve the required skills. These workers will be promoted to the more highly skilled jobs and their places will be filled by the unemployed unskilled and by young workers entering industry for the first time. The Commission has adopted the principle that training on the job in the factories is by far the most satisfactory kind of vocational training, and this system will be used so far as possible. The *third* supply of labor will be young people trained either through the apprenticeship training courses or through the N. Y. A. The apprenticeship courses will, of course, prepare skilled workers. The N. Y. A. will give young people the basic, general knowledge which they require such as blue print reading, familiarity with tools and machines, and fine computing instruments, etc.

The country has been divided into 20 regions and the Commission recommends the appointment of advisory committees made up of employers and workers in each community. The functions of these committees will be to determine the types of skills required by the industries in their respective communities and to arrange for the proper vocational training through vocational schools and the N. Y. A. In the past vocational training in agricultural areas has been confined to agricultural pursuits. It is proposed that opportunities shall be given to farm youths to secure training for industrial jobs that may open up in their communities.

The third function of the Labor Section of the Commission is to recommend labor standards for defense production. The standards recommended were unanimously approved by the commission this summer. They include complete compliance with all State and Federal labor laws such as, the Public Contracts Act, the Fair Labor Standards Act, Labor Relations Act, etc., and the furnishing of safe work places for labor. Emphasis has been placed upon the increase in production which will result from safe and wholesome labor conditions.

The Labor Section is aware that production cannot be increased if housing facilities in the neighborhood of newly established industrial plants are lacking. Therefore, a huge housing program is being planned. Congress is about to appropriate a large sum for this purpose. The work will be under the direction of the W. P. A., and the Labor Advisory Committee of the Defense Commission has determined the labor standards to be observed.

If the defense program is to be speeded up, industrial disputes and strikes must be avoided as much as possible. That is the task of the Conciliation Division of the U. S. Department of Labor. So far no serious labor trouble in a defense industry has arisen. The Conciliation Division has been remarkably successful in settling labor disputes in these industries.

At the beginning of the defense program many large government contracts were let to companies with notoriously bad labor records. That was due to the fact that the old practice of awarding contracts to the lowest bidder was followed. The Defense Commission has radically changed this policy. Negotiated contracts are now to be drawn and many things besides prices are to be taken into account in awarding them.

1. The labor standards approved by the commission must be observed.
2. The character of the employer, whether he is honest and fair in his dealings is considered.
3. The number of unemployed and the available industrial equipment in the various communities is a determining factor in letting these contracts. Large contracts are subdivided and certain portions of them are let to localities in which the labor supply and plant facilities are available.

4. The ability of firms to complete the contracts on time is another element taken into account.

II, - Organization of the Labor Division of the Defense Commission.

A Labor Policy Advisory Committee has been appointed by the Defense Commission. This committee consists of eight representatives of the A. F. of L., and eight of the C. I. O., and four of the Railroad of Brotherhoods. The committee meets every other Friday and among other things recommends the labor standards which should be observed in defense industries. It also advises the Commission concerning the reaction in the various local communities to the defense program as it affects labor.

Many government agencies are represented on the Defense Commission. These include the U. S. Employment Service, the N. Y. A., the Federal Apprenticeship Committee, the Office of Education, and the Conciliation Division of the U. S. Department of Labor.

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WOMEN IN INDUSTRY

September 1, 1939 to September , 1940.

INTRODUCTION

Most important development this year is the launching of the preparedness program. Designed to speed up production in certain fields this effort has necessitated the training and adequate protection of operatives called to man defense industries. Although the undertaking is only a few months old much has been done along these lines. High spots include a conference at the Women's Bureau in Washington of men and women in key defense industries; the setting up of a labor advisory committee of representatives of labor groups in these industries to recommend how women can best function in the emergency, the making available of material on the experiences of women workers during the last world war. The subsequent period both at home and abroad in securing increased output without sacrificing the efficiency and health of the workers.

FORCES AND EVENTS THAT ARE BETTERING CONDITIONS OF WOMEN'S WORK

Despite the emphasis on national defense, conditions under which women work have been improved. Some of the most outstanding gains made are:

In the field of Federal control or aid:

1. An estimated 4 million women are covered by the Fair Labor Standards Act which prescribes with certain exceptions 30 cents an hour for a 42 hour workweek with time and a half for over time. More than 300,000 women have had their wages further raised by minimum rates in the hosiery, textiles, millinery, shoes, knitted underwear and commercial knitting woolen, hats, knitted outer wear, and apparel industries.

2. From July 1, 1939 and June 30, 1940 approximately 35,000 **men and women workers** were reinstated by the N. L. R. B. after strikes and lockouts and discriminatory discharges. Of this number about 2,500 received back pay amounting to around $400,000.

3. Women engaged in public contracts have had their wages increased when minimums were fixed in the fertilizer, paper and pulp, small arms ammunition, explosives and related products; and cement industries.

4. Intensive studies have been made in certain fields which may point the way to the betterment of employment conditions. Some of the more important surveys undertaken by the Women's Bureau include the investigation of the following:

   Women in Federal Service
   Fish Canning

Women's Employment and Personal and Family Responsibility
    (Cleveland and Salt Lake City)
Cost of Living Study in Utah
Hawaii Women Employing Industries
Maryland Service Industries
Office Workers Study
Booth Renting in Colored Beauty Shops under D.C.
    Minimum Wage Order

5. From September 1, 1939 to June 30, 1940 almost half a billion dollarswere paid to men and women workers as unemployment compensation under the provision of the Social Security Act.

6. Over 14 million women are earning credits which may entitle them and members of their families to benefits under the old age and survivors insurance system of this same act.

By the action of State authorities:

1. New minimum wage orders in a number of industries and States have raised the wages of many women.

2. Some advances have been made in State legislation.

Little legislative activity is noted this year. This is explained in part by the fact that few of the legislatures were in regular session. At the same time there is noticed some inertia evidenced by the failure of states to either strengthen then existing laws or undertake additional regulation such as in the field of domestic service and seasonal work.

ADVANCES IN WOMEN'S WAGES

In March 1940 women's hourly earnings averaged 47 cents in the major woman-employing manufacturing industries, an increase of 3 percent from March 1939, according to figures reported twice a year by the Women's Bureau. These hourly earnings had increased in almost every industry reported. During this period the 30-cent minimum required under the Fair Labor Standards Act went into effect, and the resulting increases at the bottom of the wage scale undoubtedly had an important influence in pushing up the hourly averages. Most notable of the advances were the following:

Percent increase

10 - cotton dresses
6 - cotton goods; hosiery; candy; women's undergarments; rubber boots and shoes
5 - silk and rayon; woolen and worsted

Average week's earnings, however, remained practically the same as last year, due to a decline of nearly 3 percent in hours worked, though there had been increases in week's earnings in a number of individual industries. In March 1940 women's week's earnings in these manufacturing industries averaged

$15.92, with an average of 34 hours worked in the week. Here again the wage picture varies widely with the industries, some having high, others quite low weekly averages.

STATE LABOR LEGISLATION AND LEGAL DECISIONS

Appended to this report is a supplement giving more details concerning state labor legislation and legal decisions. With only three legislatures in regular session during the last half of 1939 and nine during 1940 there was little opportunity for significant legislation. More activity is noted on the part of the various state wage boards, with four orders made mandatory and nine new orders issued.

Bills to limit hours of work and set a minimum wage for household workers were introduced, but not passed in the State of New York. Four states considered, but failed to enact wage and hour bills covering men and women workers alike.

The effort to curtail the employment of married women in public service has abated somewhat. Mississippi considered but failed to pass such a measure; Louisiana passed but later repealed a law of this type. On the other hand, a bill to safeguard the rights of married women was introduced into the New Jersey legislature although it failed of enactment. It is hoped that the New Jersey example of attempting to enact a statutory defense against this insidious type of class legislation will be followed in other state legislatures.

WOMEN WORKERS' NEEDS CONSIDERED AT INTERNATIONAL CONFERENCE

The Second Conference of the American States Members of the International Labor Organization, held in Habana, Cuba, November 21 to December 2, 1939, adopted resolutions stressing among other things, the need to evaluate women's skill on the same basis as men's and to develop means, such as vocational training, to improve women's output where it falls below men's in quantity or quality. The Conference recommended the abolition of industrial homework, and outlined strict regulations to control it as long as it exists and requiring the same minimum-wage rates as for similar work in factories.

Other resolutions called for a progressive program for domestic and agricultural workers, legislation to prohibit the dismissal of married women workers because of their marital status, the granting to women all of the rights necessary to enable them to function fully as responsible citizens, including the right to organize for collective bargaining, to have full representation in all bodies responsible for preparing and administering social and labor legislation, as well as the right to vote and hold office.

SUMMARY AND FUTURE NEEDS

In looking ahead two problems loom large:

FIRST: The months that lie ahead will unceasingly throw into relief the role of the woman worker in defense industries. Every effort must be made to train her for her work, place her in occupations for which she is well qualified by reason of her natural endowments, and safeguard her health and wellbeing. Those of us who have had years of intimate contact with these problems must be prepared to take an active part in policy formulation.

SECONDLY, and of equal importance. There must be no slackening in our struggle to secure for women workers everywhere the benefits of reasonable labor regulation. [illegible] There are still large groups of workers --covered by the Federal law. [illegible] I have in mind three groups in particular, women in highly seasonal occupations, household employees and industrial homeworkers.

It must be kept in mind that our inner defense -- defenses against exploitation, poverty, disease, -- are as important to our national existence as the military preparations we are making. No stronger weapon against aggression can be forged than the day by day demonstration that the American way of living is best designed to minister to the needs of mankind.

August 2, 1940

MEMORANDUM

SUBJECT: State and Local Cooperation in National Defense

THE PROBLEM

Preparation for our national defense requires cooperative effort with unity of purpose throughout the country. The nation must have strong military and naval forces, adequately trained and equipped; it must assure the economic, physical and social fitness of the people as a whole; it must refresh and make more firm their loyalty to the national interest by affording opportunity for officials and citizens alike to gain a clear understanding of programs and objectives and give fruitful expression to their desire to serve. Fortunately, a vast network of organized effort, both public and private, may be enlisted to achieve these ends.

Public agencies exercise constitutional and legal powers vital to total defense. These powers are distributed among federal, state and local governments. Each jurisdiction has its own policies, programs and administrative machinery. In addition, certain national programs are executed cooperatively by federal, state and local jurisdictions. In some, the federal government exercises substantial administrative control. In others, its participation is limited to the prescription of minimum standards and administrative guidance. In still others, only cooperative working relationships exist.

In the interests of national defense, new national programs are being devised and existing programs are undergoing changes in scope or emphasis. These new or changed streams of activity flow out from the federal government into state and local communities. Furthermore, governmental programs are being initiated at state and local levels, which supplement or buttress federal activities at many points.

Although defense is primarily the responsibility of government, quasi-public organizations of governmental units and of public officials for cooperative effort and improvement of administrative methods and private agencies which direct or influence the voluntary action of individuals also have important potentialities for useful service. These private agencies are organized in labor, trade, industrial, scientific, professional, civic, religious or fraternal bodies, many of which have programs and administrative machinery operating on a national, state and local basis. Some of them maintain a close liaison with various governmental jurisdictions and agencies. Others foster activities which affect the social, physical and economic well-being of their members. Many of these quasi-public and private agencies have both a desire to cooperate and an ability to contribute. Together, they constitute a pool of knowledge, skill, power and influence flowing through organized machinery into group action. This may be drawn upon advantageously to facilitate and supplement governmental activity and to promote that common understanding of defense measures and objectives which is essential to self-disciplined unity of effort.

Widespread interest is already being manifested in the defense program. Evidence of an active desire to participate is abundant. Several states have set up councils or committees of defense and the governors of other states have similar action under consideration but are awaiting suggestions from the Council of National Defense and its Advisory Commission. Private organizations and local communities are undertaking various types of activity--some meritorious, some ill-conceived, some untimely--and many groups and individuals are proffering facilities, services and ideas of varying degrees of usefulness.

The problem, then, is to provide means for full utilization of the powers and administrative organizations of federal, state and local governments and for adjusting and coordinating programs and procedures in order that closely integrated administrative machinery may function with the maximum speed and effectiveness. At the same time, private agencies should be afforded opportunity to put their knowledge, skill and organized facilities at the service

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of the nation, and individual offers of aid should be properly appraised and their constructive values assimilated. Through such blending of powers and harmonious collaboration, public and private organizations, groups and individuals may participate effectively in preparation for our mutual protection against any threat of danger from within or without.

SUGGESTIONS FOR DEALING WITH THE PROBLEM

In order to provide facilities for the implementation of state and local cooperation in achieving the purposes indicated there has been established in the office of the Secretary of the Council of National Defense and of the Advisory Commission, a Division of State and Local Cooperation.

It is now proposed that there be transmitted to the governor of each state (a) suggestions as to the organization, functions and procedure of a state council of defense to be created whenever, in his discretion, it may appear desirable, and (b) the further suggestion that, when a state council of defense has been established, it encourage and guide the creation of local councils of defense where and when the need is, or thereafter becomes, apparent.

The organization and functions of these facilities, briefly outlined, would be as follows:

Division of State and Local Cooperation

Organization

The Division of State and Local Cooperation is composed of a director, an assistant director, and staff and secretarial aids. The director of the Division works under the supervision of, and reports to, the Secretary of the national Council and Commission.

Functions

The functions of the Division are to (1) serve as the channel of communication between the Council of National Defense and Advisory Commission and the state councils, and through the state councils with local councils in each state; (2) keep the state and local councils currently informed regarding the national defense program as it develops, particularly with respect to the specific activities in which the cooperation of state and local agencies is required from time to time; (3) receive from defense councils in the states reports upon problems of coordination requiring federal attention, recommendations for necessary adjustments in programs, suggestions regarding new activities, proffers of facilities or services, and be responsible for their routing and follow-up to insure appropriate disposition; (4) clear information between defense councils in different states regarding matters of council organization, administration and activity.

State Councils of Defense

Organization

Environment, tradition, constitutional authority and the administrative arrangements of government differ from state to state. Hence, any suggested plan of organization may require adaptation to meet varying situations. Certain considerations can be presented, however, which may be of assistance in setting up state defense councils.

1. A state council of defense should advise and not execute. Its advice should go to the governor, in his capacity as chief executive and commander-in-chief of the armed forces of the state.

So far as practicable, all action on defense programs should be taken through existing agencies, public or private. Additions to current programs should be routed through established channels for execution, new types of activity assigned to existing agencies wherever possible and new agencies created only when unavoidable. Neither state nor local defense councils should attempt to take over, supervise, or control existing and continuing activities of Government including present Federal-State or State-Local relationships. The council, by submitting its recommendations or suggestions to the governor, places them in the action stream. If the matter involved is within state competence, the governor, through his constitutional or moral authority, may direct or suggest the desired course of action to the proper officers. If it lies within federal competence, he may refer it to the appropriate federal agency for consideration.

> 2. A state council may consist of the governor as chairman ex-officio, an executive vice-chairman, and members to be appointed by or with the approval of the governor. Each member should be charged with responsibility for a broad functional area of subject matter in which he is especially qualified.

The executive vice-chairman would preside at meetings of the council in the absence of the governor, would be responsible to the governor for the coordination of the work of the council, and subject to the governor's direction, would serve as the central point of contact between the state council and the national Council and its Advisory Commission on the one hand, and local councils within the state on the other.

The functional areas represented in the membership may vary from state to state and from time to time. It is not essential that the same functional areas now recognized in the federal Advisory Commission be duplicated at the state level. For example, price control is a national problem that cannot be dealt with effectively by individual states, while civil protection is a major responsibility of state and local agencies. States generally might well consider recognition of the following functional areas (which are later defined), with the understanding that, as the defense program unfolds, circumstances may justify subdivisions within some of these areas of the addition of new ones: (1) agricultural resources and production; (2) civil protection; (3) health, welfare and consumer interest; (4) housing, works and facilities; (5) human resources and skills; and (6) industrial resources and production.

> 3. Under each functional member, a committee may be formed, composed of state executives of both state and federal agencies whose activities lie in that functional area, and members drawn from private agencies having a legitimate interest in it, to be appointed by the Governor.

The Committee for the functional area of human resources and skills, for example, might include the director of the state employment service, the chairman or executive director of the state civil service commission (if any), the state directors of Work Projects Administration, National Youth Administration and Civilian Conservation Corps (if any), the state superintendent of education, the state vocational director, and members drawn from state labor organizations, industry, and such technical and professional organizations as have a special interest in this area.

4. There might well be added to the state council of defense, either as members without portfolio or as staff consultants attached to the office of the executive vice-chairman (1) a member or members of the legislature; (2) the chairman or executive director of the state planning board (if any); and (3) the president or executive secretary of the state league of municipalities, or similar organizations of local governments however named.

The legislative member or staff consultant would serve as the advisor on legislative problems which may arise in connection with the defense program.

The state planning board, in those states where planning bodies are in existence, might well be designated as the fact-finding agency of the council not only to make available the material which has already been collected by the Board, but also to compile, correlate and interpret statistical and other data already available in national, state or local agencies, public and private, and to conduct such additional investigations as may be required.

Through the state league of municipalities, or other similar organizations of local governments, cooperation with local units of government may be implemented and useful channels provided for clearance of information with local communities.

5. Although, under the plan for organization of state defense councils herein suggested, the several functional areas which are to be represented should be designated and defined at the outset in the light of what may now be foreseen, it may not be necessary or desirable immediately to appoint, or if appointed, to call to active duty, all of the members of the council.

The need for the creation of a state council of defense and the time and manner of its appointment are, of course, matters which must be decided by the governor of each state, taking into account the particular situation in that state. Under the plan of organization suggested, (1) the entire membership may be appointed simultaneously and called to active duty at once, or (2), although appointed simultaneously, each may be called to active duty as definite need arises for planning future activities or for active service in the particular functional area to which assigned, or (3) appointment of any member may be deferred until his services are required for active duty.

Should the second or third of these alternatives be followed, it would seem advisable to first appoint as an aid to the governor in defense matters the person who is to be designated executive vice-chairman. Thereafter, members of the council to assume responsibility for particular functional areas may be appointed or called to active duty as occasion requires.

Functions

It would be the function of a state council of defense to advise the governor on problems arising with respect to the (1) integration of governmental programs for defense; (2) adjustments or arrangements necessary for prompt assimilation of such programs by the administrative establishment; (3) proper coordination between the activities of government and private agencies cooperating in the defense effort. Subject to the direction of the governor, the council should also (a) guide and assist in the organization and operation of such local councils of defense as may be established within the state; (b) clear information concerning defense programs and objectives among cooperating agencies; (c) receive, acknowledge and appraise proffers of facilities, services and ideas originating within the state and make appropriate disposition of them.

Local Councils of Defense

The state councils of defense may find it desirable to suggest the formation of councils of defense if, and where a definite need is apparent in the local subdivisions of the state, particularly in the more populous areas. As with the states, each community presents a different situation and adaptation of any general plan of organization should be made to fit that situation.

In general, such councils of local defense should be established in accordance with the same principles and perform the same functions with respect to matters of national defense for the local subdivisions as the state councils do for the state. A local council should occupy the same relationship to the governing authorities of the local subdivision as the state council does to the governor.

Specifically, the mayor or chief executive of a city or the chairman of the governing body of a county would serve as chairman ex-officio of a local council; perhaps with an executive officer immediately subordinate to him, charged with responsibility under his direction for coordination of the activities of the council. Through this executive officer, contact would be maintained with the state council and, through the state council, with the national Council and its Advisory Commission.

Like the state council, the local council would (1) advise its chairman with respect to local problems of integration and coordination of national, state and local defense programs, public and private; (2) clear information among cooperating agencies with respect to defense programs and objectives; (3) receive, evaluate and make appropriate disposition of offers of facilities, services and ideas.

In areas where it seems advisable and local conditions would permit, a single council may be established to serve a county and any cities lying within the county, such council reporting through its executive officer to a joint committee representing the county and municipal governments. In large metropolitan areas extending into two or more counties, a single council may operate under the supervision of a joint committee representing each of the counties and important municipalities in the area; if separate councils should be organized, joint coordinating committees dealing with specific functional areas, such as civil protection, or a particular segment of a functional area, such as the labor supply segment of human resources and skills, or the health segment of health, welfare and consumer interest, may be found useful.

The functional areas to be represented on local councils will vary from place to place. Probably, on all such councils, civic protection, health, welfare and consumer interest, and human resources and skills will need to be recognized. In industrial centers, industrial resources and production, and housing, works and facilities may well be included. In rural areas, agricultural resources and production will be of definite concern.

DEFINITION OF FUNCTIONAL AREAS

The functional areas suggested may be briefly defined as follows:

Agricultural Resources and Production

Includes the conservation and use of land and the crops and livestock it supports; and the growing, marketing and processing of plant and animal products for consumption as food or as raw materials entering into industrial production.

Civil Protection

Includes the protection of civil liberties, maintenance of law and order, and measures to guard against sabotage and subversive activities, by the legally constituted authorities through the enforcement of law and the exercise of regular and duly established police powers.

(The National Guard, while serving under state authority, may be regarded as one of the agencies for civil protection. Should it at any time be mustered into the federal service, control over the Guard would pass to the War Department. Any military organization set up within a state as a substitute for the National Guard would fall into the same category.)

Health, Welfare and Consumer Interest

Includes activities designed to contribute directly to the social, physical and economic well-being of the individual and the family; such as, maintenance of mental and physical fitness, protection from want, aid in making the most advantageous use of income, protection against unwarranted rise in prices or depreciation in quality of consumer goods and services, and care and custody of dependent, deficient or unsocial members of the population.

Housing, Works and Facilities

Includes provision of housing, particularly for people of low income and for Army and Navy personnel; buildings and structures; works for water supply and sanitation; power production and transmission; highways, airports and other transportation facilities.

Human Resources and Skills

Includes all activities relating to the supply of, and demand for, human energy, professional scientific or technical competence, trade and occupational skill, and the training and rehabilitation necessary to supply present or anticipated needs.

Industrial Resources and Production

Includes the extraction and processing of minerals, petroleum and other nonagricultural raw materials; manufacturing operations; the development and organization of the necessary facilities for such processing and manufacture, and of power, transportation and distribution facilities incident thereto.

GENERAL COMMENT

Nothing in this memorandum should be construed as urging or necessarily recommending the establishment of state or local councils of defense unless, and until, state authorities deem such organizations definitely necessary and desirable.

It is contemplated that state and local defense councils if established will confine their attention purely to defense programs and will not extend their interest to normal programs of public, quasi-public or private agencies unless they impinge directly upon matters of defense.

New currents of activity resulting from the defense program would follow two main channels. These may be designated broadly as (1) action and (2) coordination and clearance, the action channel connecting national, state and local administrative agencies and the coordination and clearance channel connecting the national, state and local councils of defense.

Through the action channel, governmental defense programs initiated at the national level would be transmitted from federal to state administrative agencies along with necessary suggestions as to method and procedure, such grants or authorizations as may be provided by law and such other assistance as the federal agencies are in position to render.

At the state level, the programs would be cleared with the state defense council; then action could proceed. Should adjustments be necessary to fit the programs into the state facilities and practice, or coordination with other programs be needed, these would be worked out in the appropriate council committee. Any difficulties that could not be resolved within the discretion of the administrative officers concerned would be referred to the governor for his consideration and action. If the matter were within federal competence, he might in turn refer it to an appropriate federal agency -- either to the administrative department concerned or to the Advisory Commission through the Division of State and Local Cooperation, depending upon the circumstances of the case.

Essentially the same procedure would apply at the local level, action programs being cleared with the local council and problems being referred back to the state administrative agency or council.

With respect to defense programs of cooperating quasi-public and private agencies, the same practice would be followed as with programs of public agencies.

Through the proposed Division of State and Local Cooperation, the Council of National Defense and the Advisory Commission would transmit currently information regarding general objectives and particular programs in which state and local cooperation is desired. As far as practicable, notice of programs in process of development would be issued in advance in order that preparation might be made to give them prompt attention. State councils, in turn, would keep local councils informed. Problems arising in the coordination and clearance process requiring consideration by higher authority would feed back from local to state councils and from state councils to the National Council through the Division of State and Local Cooperation.

Through discussions in committees assisting the members of the council and by other means, information regarding programs would be cleared among the cooperating agencies concerned.

Those desiring to offer facilities, services or ideas for defense should be encouraged to submit them, first, to a local council of defense, or, where no local council exists, to the state council. If they were thought to merit consideration by higher authority, they would be routed to the state or national council, as the case might be.

The national government may be expected to initiate requests for informational surveys from time to time in which the assistance of state and local agencies, both public and private, may be required. Technical guidance and suggestions as to method and procedure for conducting desired informational surveys would be developed by the appropriate agencies in order that the data collected may be adequate and comparable. These surveys would be routed and cleared in the same way as action programs.

Finally, under the general principles of organization which have been sketched in broad outline, adaptations can readily be made to different state or local situations. The size of councils of defense can be kept within workable proportions and can be expanded or contracted as activity increases or declines. The interests of institutions and agencies having legitimate concern with a particular functional area may be represented on the appropriate committee, thus affording opportunity for participation and useful service. Defense programs, both public and private, may be brought into harmony, ill-conceived or untimely lines of action discouraged, and the most fruitful use made of the organized facilities which are available.

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DETAILED REPORT OF DEVELOPMENTS TO DATE

I. The Women's Bureau has recommended standards for women's employment in defense production.

a. A Labor Advisory Committee has been set up.

In June 1940 a Labor Advisory Committee was organized, to advise with the Women's Bureau as to types of jobs in defense industries for which women were best suited, and as to policies necessary to guarantee the most effective use of women as the labor force without undermining their welfare. Eight labor organizations are represented on this committee. This committee has met twice, on June 28, 1940, and on November 7, 1940.

b. The Women's Bureau has prepared the following bulletins on standards for employment of women:

Special Bulletin No. 1 - Effective Industrial Use of Women in the Defense Program (July 24, 1940)
Special Bulletin No. 2 - Lifting Heavy Weights in Defense Industries (April 15, 1941)
Special Bulletin No. 3 - Safety Clothing for Women in Industry (in press)

c. The Women's Bureau has taken certain action in connection with employment standards for women.

1. General policies set up

In considering any exemptions from State laws covering women workers, the recommendation of the Women's Bureau is that no exemption be granted without first investigating the specific situation. If the circumstances justify the request for exemption, the exemption should be granted only to the specific firm asking for it, and then only for the duration of the period covered by the government contract for that product. No State-wide exemption should be granted. An employer should apply anew for an exemption when work is begun on the next government order.

2. Agencies consulting the Bureau

Certain questions have been referred to the Women's Bureau by State Departments of Labor, by the War Department, and by the O.P.M., involving exemption of defense plants from State laws protecting women. In investigating these situations, the Women's Bureau has kept in mind (1) whether there was available a sufficient labor supply qualified

c. cont'd

along the necessary lines, to make up another shift, (2) whether there was space for enlargement of present facilities, so that more workers could be hired provided a labor supply was available, and (3) whether any other solution to the problem could possibly be evolved, so that relaxation of the State laws would not be necessary.

3. State labor laws for women

Many States do not have the authority to relax their State hour laws. (See Appendix A). In the 1941 session of the Connecticut legislature, a bill in both houses would authorize the Governor to suspend daily and weekly hours prescribed by law (no word as to final action yet, - House and Senate disagreed).

4. Night Work

The Women's Bureau has formulated a statement of policy in recommending that night work laws be relaxed for the duration of the defense program. However, this statement has not been given publicity. (See Appendix B).

d. State action

1. Connecticut. The Governor has granted the request of the Winchester Repeating Arms Co. for exemption of women from the Connecticut night work law, to the extent that women can now work until 11 p.m. (previously 10 p.m.).

2. Massachusetts. The legislature again permits the employment of women over 21 in textile manufacturing until 10 p.m. (previously 6 p.m.), this permission extending to April 1, 1943. This is a continuation of action taken in previous sessions. The night work law for all other manufacturing prohibits women working between 10 p.m. and 6 a.m.

3. Nebraska. The legislature changed the prohibitory night-work period from 12:30 to 6, to 1 a.m. to 6 a.m. The law also provides that the Commissioner of Labor may permit work between these hours in manufacturing, mechanical, mercantile, laundry, hotel and restaurant industries. A fee of $3 is charged for the permit, and is credited to the "labor fund" (the administration of this law is to be paid out of said labor fund).

4 New Hampshire. There is no night-work prohibitory period fixed, but for work performed between 8 p.m. and 6 a.m.,

c. cont'd

no more than 8 hours can be worked in any 24, nor more than 48 in any week - and all this can be suspended "during war time in the manufacture of munitions or supplies for the United States or the State."

Orders under minimum wage laws are being revised in California and Oregon, and we do not know yet if night-work prohibition will be included.

Although Wisconsin has a prohibitory period of 6.p.m. to 6 a.m. for women workers, the law authorizes the Industrial Commission to fix hours "during any day, night or week."

(See Appendix C - Bul. 156-II for States prohibiting night work).

Ore.
New orders issued
this year do not contain
any provision prohibiting
night work - therefore
Ore. is not to be counted
any longer as a State prohibiting
night work - in industry FS

II. Special studies by the Women's Bureau of the occupations and opportunities for women, including references to expansion of existing plants and new plants (in the process of being built);

a. Field investigations of women's employment, with reference to types and number of plants visited and mention of available reports. (appendix i)

1. At the time of the November Conference on Training the Committee received a report that in the fall the Women's Bureau visited approximately 40 plants having defense contracts for products in which women were or could be employed. These included aircraft plants making engines, instruments, parts, and assembling planes; machine tool manufacturers; factories fabricating iron, steel, brass and aluminum products; plants making electrical products, ammunition and firearms, rubber products and gas masks. (Report on investigation prepared.)

2. Since November additional plants have been contacted. Return visits to certain New England munitions and an aircraft engine plant showed that in some of these the force of women workers had increased by about 50 percent, in some it had doubled.

3. The Women's Bureau visited aircraft plants in California, New York and Connecticut this spring, but at the time of the visit women employees in productive divisions were too small in number to be significant - less than 150 altogether in 8 major plants as factory operatives. (See report on aircraft industry previously mailed committee members.)

4. Two major Government arsenals -- Picatinny and Frankford -- were visited to secure information on numbers of workers, the processes in which they were engaged, the possibilities for expanded employment opportunities for women and health and safety provisions.

Note: The Civil Service Commission reports that while on July 31, 1940 there were 2,900 women in government arsenals, by April 1, 1941 one number had increased to 7,900.

5. Study of women's employment in small arms ammunition plants. Report prepared and available for distribution.

Note: There are three main classes of munition plants; those owned and operated by the Government such as Frankford and Picatinny Arsenals; those owned and operated by private concerns such as Remington Arms, Western Cartridge and U. S. Cartridge Co.; and those built by the Government but immediately upon completion leased to private concerns. Among the latter are the number of plants now under construction which will begin operation in the fall of this year. Several of these are being built in small communities because of the attempt to de-centralize industry and to keep them in safety zones away from the coast.

b. Data on some new developments and expansion of existing plants, with reference to use of women compiled by Women's Bureau through interviews. (See Appendix E for list of such plants, products, and numbers of employees by sex.)

c. In addition to the attached list women in considerable numbers are working in plants making small motors, screw-machine products, gauges, brass parts, electrical products, ammunition components. Several thousands of women are employed in rubber plants making tires, tubes, balloons, gas masks, blimps, small plane parts, and tires for tanks.

d. The Women's Bureau has further evaluated certain occupations in relation to the suitability of women's employment. See Aircraft Report, Small Arms Ammunition, and material presented to the November Conference.

III. Stress on need for training

a. The report outlining the findings of the special conference on Vocational Training of Women Under the Defense Program called by the Women's Bureau, November 7, 1940 was distributed widely.

b. On November 8 following the Conference Miss Anderson and three representatives of the Labor Advisory Committee called on Mr. Sidney Hillman of the Advisory Commission to the Council of National Defense to discuss the need for women's training and for the appointment of a woman on the Defense Council staff to be responsible for women's participation in the emergency program.

c. On November 14, Miss Anderson attended a conference called by Dr. Reeves of the Defense Advisory Commission to discuss women's work in defense industries and also preparation of women for work in defense industries.

On November 25 Miss Nienburg attended a conference called by Dr. J. W. Studebaker, U. S. Commissioner of Education to discuss further training needs.

Miss Nienburg since last August has served as a member of the N.Y.A. Advisory Committee on the training of girls.

d. Following these conferences two letters were written by important officials to field representatives relative to training

1. On January 7, 1941 Mr. C. R. Dooley, Director, Training within Industry of the Advisory Commission to the Council of National Defense wrote a letter to all District Representatives enclosing copies of the list of occupations and skills which the Women's Bureau believes women are capable of performing in defense industries and the Bureau statement setting forth a general description of the types of training deemed essential. He recommended to these officials that they consider the appointment of a woman or women as members of their panels or that they be used in some other advisory way. (See Appendix a for copy of letter).

2. On February 21, 1941 Mr. J. W. Studebaker, the U. S. Commissioner of Education, addressed a memo to all executive officers in the Defense Program of Vocational Education urging that women be vocationally trained. (See Appendix b).

e. Reports of training efforts from other Government agencies

1. U. S. Office of Education)
2. O.P.M.) See Appendix g h
3. N.Y.A.)
4. W.P.A.)

f. Special verbal, newspaper, and radio statements have been made by members of the Women's Bureau staff stressing the need and value of training women as a vital part of the defense program.

IV. Recent trends in women's employment as revealed by research activities

a. Data on numbers of women in defense industries.

1. The Office of Production Management has designated 14 industries as defense industries. In this list none of the largest woman-employing industries such as textiles, clothing, and food has been included even though much of the output of these industries is on Government contract for military purposes.

   No Government agency has made any estimate as to the numbers of women employed in the 14 defense industries.

2. Data from the Bureau of Employment Security on placements and occupations of women in defense industries are secured at regular intervals. (See extracts from N.W. Trends [illegible])

   The Bureau of Employment Security (U.S.E.S.) has evaluated occupations from the standpoint of the suitability of women's employment -- physical strength necessary, etc.

3. The Women's Bureau follows closely in the press and in periodicals all matters pertaining to women in defense. A current file of press clippings is maintained for reference purposes. Special reports are frequently made by the Research Division to the rest of the Bureau on recent developments including training projects, displacements of men by women, on breakdown in restrictions against the employment of married women, expanding opportunities for women's employment, etc.

b. A list of references of publications, articles, and reports on women and defense in this country and others is kept up to date.

The more important points from these are summarized in the RW

V. Interest of other Government agencies and the public in women and defense as revealed by requests to the Women's Bureau for information

a. Distribution of printed reports on women workers.

1. Special Bulletin No. 1. Effective Industrial Use of Women in the Defense Program -

Consists of standards of health and safety, hours, wages, training, and employment and industrial home work. Up to June 1, 1941 nearly 27,000 copies of Special Bulletin No. 1 had been distributed to the general Women's Bureau mailing list, to Federal and State agencies, to labor groups, employers, women's organizations, schools and colleges, and a large number of interested individuals.

2. Special Bulletin No. 2. Lifting Heavy Weights in Defense Industries, consists of an explanation of methods for conserving the health of women workers.

Up to June 1, 1940, some 6300 copies of this Bulletin had been distributed to the general Women's Bureau mailing list, to labor groups, health organizations, insurance companies, government agencies, educational and welfare groups and many interested individuals.

3. The Woman Worker and reprints of defense articles.

articles on current developments - [illegible]

The circulation of the Woman Worker is 3,000 copies. In addition several hundred reprints have been made of each article appearing in the Woman Worker dealing with defense. In this way current data on the latest developments have been made readily available.

4. Other reports.

In addition to mimeographed reports on defense available at the time of the last conference, two additional multilithed reports are now available - the aircraft report before mentioned and the small arms ammunition report just released.

b. Speeches by staff members. Throughout the year various members of the staff have addressed a wide variety of audiences on a number of aspects of the defense program including Women's groups, labor groups, personnel and guidance officials and college groups. Several radio speeches were made also.

c. Articles and News Releases. - Articles on Women Workers in the defense program have been prepared upon request for various technical and popular periodicals. News releases have been issued at irregular intervals when it was deemed important that a certain phase of women's defense activities be presented to the public, to help meet the many requests for such information.

d. Interviews and contacts with individuals and representatives of various organizations wanting information on women in defense. These have been of various types.

1. A close relationship has been maintained with Government agencies working in the field of defense, particularly on jobs, for women and training, including — The Office of Production Management; the National Youth Administration; the U.S. Office of Education (Trade and Industrial Education Service); the War Department; the Bureau of Home Economics (study of safety garments for employed women); the U. S. Employment Service; the U.S. Public Health Service.

2. Correspondents of newspapers and magazines keep close touch with Women's Bureau defense activities. During recent months these have included among others: Representatives from "This Week" magazine, the International News Service, Science Research Associates, Harpers' Bazaar, the British Press agency "Britanova", New York Times, the Associated Press, United Press and other press agencies, local papers, and several important free lance writers.

3. Representatives from important labor and women's organizations interested in women's problems come frequently to the Women's Bureau for advice including the following: American Federation of Labor, Congress of Industrial Organizations, American Federation of Hosiery Workers, American Women's Voluntary Services, Inc., Pan-Hellenic Association of Professional Sororities, Democratic Women's Organizations, and the National Board of the Young Women's Christian Association, to mention a few.

4. Miscellaneous contacts have included the following: Representative from powder company requesting help in formulating policies for women in a new munitions plant; International Labour Office; many individual women from all occupational groups seeking individual advise as to how they can get jobs or help as volunteers with the defense program.

5. A special exhibit on women and defense prepared to meet requests for such material for use at conferences.

When Trainee and Instructor are Both Safety Conscious the Accident Rate is Reduced

★★★

SAFETY

For The Woman Trainee

★★★

War Production Training Division
State Department of Education
Montpelier, Vermont

WOMEN HAVE DOUBLE DUTY NOW

Your health must be preserved; your morale kept high and your contribution to war production unfailing.

These three obligations are war's demands on the women of America.

The National Committee for the Conservation of Manpower in War Industry and the United States Department of Education through its war production training schools recognize their common purpose in supervising safety practices among trainees and in improving safe methods of operation in our war production training program.

Personal Protection:

Wear proper hair covering, a cap with 2" or 3" visor for all machine operators.

Goggles must be worn on all operations where flying chips, sparks, rays or dust are present.

Face shields are desirable protection.

Respirators must be worn as protection from dangerous fumes and gases.

Safe Clothing:

One or two-piece slack suit, bib overalls or coveralls and short or rolled sleeves, (no loose belts, no cuffs on slacks, no patch pockets). Slacks should fit close at ankle.

Approved leggings, shoes, gloves, aprons, sleeves, and helmets must be worn by welders.

Shoes:

Closed toe, low heel and heavy sole. Never wear shoes without socks or stockings. Certain jobs call for "safety toe" shoes.

Jewelry:

No wrist watches, rings, neck chains or bracelets should be worn. They get caught in moving parts or come in contact with charged electric conductors.

Safe Work Habits:

Most machines are equipped with proper guards. However, **always keep clear of moving parts.**

No running in aisles or on stairs.

Be on time at your work station.

Pay close attention to your foreman's instructions.

Never leave your machine while it is running.

Keep good housekeeping habits at your station.

Learn to use correctly small hand tools — files, hammers, screw drivers.

Asking your foreman's help is a safe work habit.

Use of Safe Tools:

Do not use files without handles.

Use right size wrenches and screw drivers.

Watch out for split or splintered handles on small tools, mushroom heads on chisels and hammers, wrenches that are spread, and screw driver blades in bad condition.

Reporting Accidents to your Foreman:

Always report any accident immediately.

Always go to the first aid room for minor as well as major injuries.

Always answer questions about your own or neighbor's injury thoughtfully, concisely and conscientiously.

Safety Cooperation:

Be interested in your own and your neighbors' safety.

Accept responsibility for your share in your school or shop safety program.

Attend first aid classes in your community if possible.

School Sanitation and Personal Hygiene:

Schools and shops provide adequate and suitable toilet facilities. Do your part in keeping them orderly.

Let no careless act of yours endanger your health or that of another worker.

If you have not had a pre-employment physical examination and any unusual physical condition bothers you at this new type of work, see the doctor. Tell him what you are doing, and **take his advice.**

Do not lift heavy pieces without first learning how. Ask your foreman to show you; get help.

Wash hands often and renew protective cream on hands and arms. It will safe scratches which may later become infected.

Do not attempt to remove anything from your own or another worker's eye.

Proper eating, adequate rest and recreation guard your health. Keep fit.

General Information:

Learn the safe way to do your job.

Never start a machine you do not understand.

Never remove guards. They are placed on the machines for your protection.

Floors wet with soapy water or oil are hazardous. Rubber soles and heels are very dangerous on wet floors. Do not wear them.

Do not visit around other stations. It distracts some workers.

Do not advise another worker about her job. Suggest she call the foreman.

Do not stand on box or bench or other makeshifts for a ladder or step.

Do not fool with compressed air.

It is very dangerous to pile material above a safe height.

Oily waste, scraps and waste paper should be kept in bins for the purpose. If left loose around benches they indicate fire hazard.

WOMEN AT WAR

This booklet is for your information and your safety. Every manhour lost due to accident is loss of materials for which the armed forces are waiting.

THE SAFE WAY IS THE ONLY WAY TO DO THE JOB

Cooperate with the State Department of Education and your instructors by making the war production schools of Vermont examples of safe, alert, and efficient training.

D

Total women 14+ 126,025
Deduct women 20+
109,590

Women 14-19 16,435

1930 Est 1940

Women 14-19 100.0
14-17
18-19

[illegible]

(44261 Tot
21875 Farm

82,697

(H[illegible]) (dwelling units)

P.H.-1

Delaware Co, Pa

Supply of women workers

Women [illegible] children

Women in [illegible]
etc

Need[illegible]
[illegible]
[illegible]
ch[illegible]

1930 Census

Del Co

① Tot women by age
g. O " "

② Tot women by mar. stat
g. O. " "

③ Tot women (of families) with children under 10
g.o. women with children

Women

14 & over

1940

Women in Phil. Met. Dist (all) —	1,197,555
" " " Labor force	377,033
not in " "	820,522
Phil. city —	804,697
L.F. —	268,842
not in " —	535,855
Chester pop. — P (181)	23,053
L.F.	6457
not "	16596
Darby	4027
L.F.	1132
not "	2895
Lansdowne	4790
L.F.	1227
not "	3563
Media (page 145)	2355
L.F.	747
	1608

Total pop. only 5351

page 54

Delaware Co.

14 & over

Pop	126,025
L.F.	32,957
Not in L.F.	93,068
H.H.	(71,759)
Empl	29,113

1930.

Delaware Co. - Penn -

1930

3/

(1125) Pennsylvania.

Total families with children under 10 — 952,158 — Del. Co. 28,097

g.o. women with children

1/ Total women by age g.o. — Nothing for counties

10 - 13

2/ nothing for counties -

Del. Co. Can get Chester only (cities 25,000 to 100,000)

Tot female 15+	103,048	100.0
Single	28,109	27.3
Married	63,698	61.8
wid		21.2

Del. Co.

Tot women g.o. 1930 - 26,720

Tot women 10+ 1930 115,472 (141,228 all ages)

Tot married women 15+ 1930 63,698

Del. Co - P. H. 1 no. 139,

Pop. 306,786

dwelling units 82,697

310,756 - 158,363
21 142 - 10 463

289,614 - 147,900
23,119 11 412

266,495 - 136,488

21142 10463
23119 11412

44261 21875

Women in Delaware County, - 194[illegible].

Age group		Total Women 1/	Single	Estimated women - Married	with children
Total 20-64		98,815		(7[illegible], 902)	(31, 324)
20 - 24		12,997		8,149	5,095
25 - 29		13,250		11,395	8,242
30 - 34		13,686		12003	8,702
35 - 39		13,402		11,620	5,964
40 - 44		12,498		10,598	3,374
45 - 49		11,173			
50 - 54	32,982	9147.		21,999	1880
55 - 59		6901			
60 - 64		5761			
				75,[illegible]	32,657

1/ [illegible] II, [illegible]

Of all the persons in the labor force in 1940, 6.6 percent were married women.

Of all the persons in the laborforce in 1940 1
8.6 percent were married women. ~~in~~
~~compared to~~ ~~with sp~~
~~1940~~ ~~an increasing proportion~~
~~of the laborforce~~ ~~[illegible]~~ 1930, ~~[illegible]~~
4.7 of all gainfully occupied persons
were married women and in 1930
the proportion was 6. [illegible] percent.
Similar trend [illegible] suppl
[illegible] necessarily [illegible]
necessarily [illegible] families
financial support
apparently [illegible] assumption
accordingly [illegible] 1940 (1940)

Year	Proportion married[1] women in the labor force[2] are of — All persons in the labor force[2]	All women 14 years and over
1940	8.6	9.0
1930	6.3	7.0
1920	4.7	5.3

[1] Includes married, spouse present and married, spouse absent.

[2] Gainfully occupied in 1920 and 1930.

[3] Based on preliminary figures for the labor force married women [illegible]

Year	Proportion married, widowed and divorced women in the labor force as % of all married, widowed and divorced women
1940	17.9
1930	15.6

[illegible] 1950

Per cent

[illegible]	Total	14 to 24 years	25 to 34 years	35 to 44 years	45 years and over
Total	12,845,059	4,036,449	3,561,240	2,465,420	2,782,150
Single	6,349,474	3,319,935	1,624,265	699,871	705,403
Married	4,560,835	—	—	—	—
Spouse present	3,807,?46	541,798	1,393,066	1,050,610	821,592
Spouse absent	753,769	144,716	543,909	714,939	1,255,155
Widowed and divorced	1,934,950				
Total	100.0	31.4	27.7	19.2	21.7
Single	100.0	52.3	25.6	11.0	11.1
Married, spouse pres.	100.0	14.2	36.4	27.6	21.6
Married, spouse absent, widowed, div.	100.0	6.5	20.2	26.6	46.7
Total	100.0	100.0	100.0	100.0	100.0
Single	49.4	82.2	45.6	28.4	25.4
Married	29.6	13.4	39.1	42.6	29.5
Spouse absent	5.9	4.3	15.3	29.0	45.1
Widowed and divorced	15.1				

C.1. 31/772

Marital status of Women 14 and over, by age

Marital status	Total [50,549,176]	14 to 24 years	25 to 34 years	35 to 44 years	45 years and over
Total	50,309,679	13,244,009	10,764,360	9,126,660	17,174,650
Single	13,973,394	9,416,635	2,057,565	951,471	1,547,723
Married spouse present	28,314,126	3,483,958	7,871,686	7,017,970	9,940,512
Married spouse absent widowed and divorced	8,022,159	343,416	835,109	1,157,219	5,686,415
Total	100.0	26.3	21.4	18.1	34.1
Single	100.0	67.4	14.7	6.8	11.1
Married spouse present	100.0	12.3	27.8	24.8	35.1
Married spouse absent widowed divorced	100.0	4.3	10.4	14.4	70.1
Total	100.0	100.0	100.0	100.0	100.0
Single	27.8	71.1	19.1	10.4	9.0
Married spouse pres	56.3	26.3	73.1	76.9	57.9
Married spouse absent, widowed or divorced	15.9	2.6	7.8	12.7	33.1

Table 6

Marital Status	1942 1)		1930 2)		Nashville		Richmond		Fort Wayne		Bridgeport	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
	Millions		Millions									
Total reporting	14.9	100.0	13.6	100.0	22161	100.0	28,129	100.0	12 883 ~~12,952~~	100.0	17038	100.0
Single	7.9	53.4	3.7	53.9	9341	42.2	13,776	49.0	7546 ~~7612~~	58.9	10996	64.5
Married	3.7	20.7	4) 3.1	28.9	6019	27.2	7325	26.0	3145 ~~3505~~	24.4	3420	20.1
W. D. Sep.	3.8	25.9			6801	30.7	7028	25.0	2152 ~~1835~~	16.7	2622	15.4
W & D.			1.8	17.2	5605	25.3	5274	18.7	1828	14.2	1811	10.6
Sep.					1196	5.4	1754	6.3	324	2.5	811	4.8

See table 11

1) Social Security [illegible]
2) [illegible] Census
3) Family Responsibility Study
4) Married and separated

Baxter County		Little Rock		Sebastian County	
No	Pct	No.	Pct.	No.	Pct.
1717	100.0	12265	100.0	3639	100.0
1007	58.6	4602	37.5	1801	49.5
308	17.9	3595	29.3	862	23.7
402	23.4	4068	33.1	976	26.8
311	18.1	3341	27.2	728	20.0
91	5.3	727	5.9	248	6.8

Miss Weston,

I may [illegible] so far [illegible]

them [illegible] of [illegible]

[illegible]

[illegible] the remainder

of this composition.

Percent distribution of women in the labor force or gainfully occupied, by marital status

Item	Total reporting	Single	Married	Widowed, divorced & separated		
				Total	Widowed & divorced	Separated
1930 1/	100.0	53.9	[4/ 28.9]	-	17.2	-
1942 2/	100.0	53.4	20.7	25.9	-	-
Nashville 3/	100.0	42.2	27.2	30.7	25.3	5.4
Richmond 3/	100.0	49.0	26.0	25.0	18.7	6.2
Fort Wayne 3/	100.0	58.9	24.4	16.7	14.2	2.5
Bridgeport 3/	100.0	64.5	20.1	15.4	10.6	4.8
Cass County 3/	100.0	58.6	17.9	23.4	18.1	5.3
Sebastian County 3/	100.0	49.5	23.7	26.8	20.0	6.8
Little Rock 3/	100.0	37.5	29.3	23.1	27.2	5.9
1940 Census 5/	100.0	49.4	29.6	21.0	15.1	5.9

1/ 1930 Census, United States
2/ Social Security [illegible] Nebraska
3/ Family Responsibility Study, W.B., 1940 Census
4/ Separated included with married.
5/ '44 Census
5/ Married, spouse present.
If separated [illegible] would make [illegible] [illegible] in 1942 [illegible]
[illegible] = .7 [illegible]

U. S. Department of Labor
WOMEN'S BUREAU
Washington

October 16, 1942

COMPARISON OF WOMEN LABOR POTENTIAL ESTIMATES Based on 1940 Census Marital Status Data and Based on Social Security Board Data 1/

The Social Security Board figures for labor force status of women in 1942 are based on 1940 census data and consequently correspond, allowing for changes in population and employment between 1940 and 1942 and for differences in method of handling the "Not reported" group. The marital status figures vary to some extent, the proportions in "Single" and "Married, husband present" groups being low compared to the Census, and the "Married, husband absent, or widowed or divorced" group being correspondingly high. The comparison is shown in Table I.

1/ Census data are the figures from the 5 percent sample presented in P. 14, No. 4.
Social Security Board data are from a report in the Social Security Bulletin for July, 1942.

TABLE I
Comparison of Marital Status of Women, Based on Census Marital Status Data and on Social Security Board Estimates

Status	Census 1/	Social Security Board 2/
	(Thousands)	(Thousands)
Total female population 14 years old and over	50,549	3/ 51,614
In the labor force.	13,085	4/ 14,851
Not in the labor force.	37,464	5/ 36,763
In school, unable to work, in institutions, and not reported.	8,274	7,011
In schools.	4,446	4,106
Unable to work.	2,268	2,447
In institutions	395	458
Not reported.	1,165	----
In home, housework, and other.	29,190	29,752
Single.	2,108	2,193
Married, husband present.	23,548	23,081
Married, husband absent, widowed, divorced	3,534	4,478
Percent distribution of those in home, housework, and other	(Percent) 100.0	(Percent) 100.0
Single.	7.2	7.4
Married, husband present.	80.7	77.6
Married, husband absent, or widowed, or divorced.	12.1	15.0

1/ U. S. Census of 1940, P. 14, No. 4 and P-10, No. 9
2/ Social Security Bulletin, July, 1942
3/ Adjusted for increases in population between 1940 and 1942.
4/ Adjusted for increases in employment between 1940 and 1942 due to population changes and to added demand for labor.
5/ Omits those not reporting, who were distributed among all categories.

The Social Security Board data indicated that 45.9 percent of the married women with husband present had no children under 16, and that 13.3 percent had not more than two children with none under 10. Of the married women with husband absent, 83.5 percent had no children under 16 and 7.5 percent had not more than two with none under 10 years of age. (See Table II).

TABLE II

Social Security Board Marital and Parental Status Data

Status	Married, husband present		Married, husband absent	
	Number	Percent (Computed)	Number	Percent (Computed)
Total.	23,381	100.0	4,478	100.0
No children under 16	10,726	45.9	3,739	83.5
Not more than 2 children, and none under 10.	3,102	13.3	334	7.5
All other.	9,553	40.8	405	9.0

Applying the Social Security Board parental status proportions to the census figures and using the proportions available for employment assumed in the Social Security Board report, would give about 9,906,000 women available for employment compared to 9,899,000 women in the Social Security Board Study. Thus the difference would be negligible in terms of a 10 million estimate. (See Table III).

If only the single women and the married, separated, widowed, and divorced without children under 16 are considered, the total would be 7.7 million. This is identical with the figure based solely on the Social Security Board data for marital status which was used by the Women's Bureau.

TABLE III

Census Marital Status Data and Social Security Board Proportions for Parental Status and Availability

	Number (Thousands)	Estimated Available: Proportion 1/ (Percent)	Estimated Available: Number 2/ (Thousands)
Total.	29,190	----	3/ 9,906
Single.	2,109	75	1,582
Married, husband present	23,548	--	3/ 7,461
No children under 16. . .	2/ 10,809	50	5,404
Not more than 2 children none under 10	2/ 3,132	35	1,096
Other	2/ 9,608	10	961
Married, husband absent	3,533	--	3/ 863
No children under 16. . .	2/ 2,950	25	738
Not more than 2 children none under 10.	2/ 265	35	93
Other	2/ 318	10	32

1/ From Social Security Board Study.
2/ Estimated on basis of Social Security Board proportions.
3/ Obtained by addition

The closeness of the estimates in spite of differences in marital status distribution results from the fact that relatively large proportions are applied to single women and to married women with no children, which differ relatively slightly in the Census and the Social Security Board data, and that a relatively small proportion is applied to married women with husband absent, which shows a difference between the two sources of over a million.